

Transportation Impact Analysis

Proposed Retail Center – North Adair Street/North 4th Avenue

Cornelius, Oregon

Prepared For:

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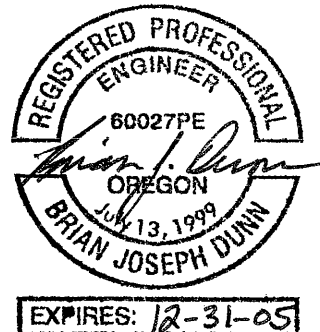
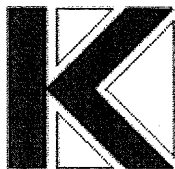


Table of Contents

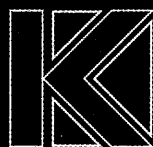
Section 1	Executive Summary	2
Section 2	Introduction	6
Section 3	Existing Conditions	10
Section 4	Transportation Impact Analysis	19
Section 5	Conclusions and Recommendations.....	39
Section 6	References	42
Appendix A	Scoping Letters	
Appendix B	Traffic Count Data	
Appendix C	Description of Level-of-Service Methods and Criteria	
Appendix D	Existing Conditions Level-of-Service Worksheets	
Appendix E	Crash Data	
Appendix F	Traffic Volume Growth Rate Worksheet	
Appendix G	Year 2006 Background Traffic Level-of-Service Worksheets	
Appendix H	Year 2006 Total Traffic Level-of-Service Worksheets	
Appendix I	Queuing Analysis Worksheets	
Appendix J	Alternative Access Scenario Worksheets	
Appendix K	Turn Lane Warrants	
Appendix L	Truck Turning Movement Diagrams	

List of Figures

Figure 1	Site Vicinity Map	7
Figure 2	Proposed Site Plan.....	8
Figure 3	Existing Lane Configurations and Traffic Control Devices.....	11
Figure 4	Existing Traffic Conditions, Weekday AM Peak Hour	14
Figure 5	Existing Traffic Conditions, Weekday PM Peak Hour	15
Figure 6	Existing Traffic Conditions, Saturday Mid-Day Peak Hour	16
Figure 7	2006 Background Traffic Conditions, Weekday AM Peak Hour	21
Figure 8	2006 Background Traffic Conditions, Weekday PM Peak Hour	22
Figure 9	2006 Background Traffic Conditions, Saturday Mid-Day Peak Hour.....	23
Figure 10	2006 Assumed Lane Configurations and Traffic Control Devices.....	24
Figure 11	Estimated Trip Distribution Pattern (Build-Out Year 2006)	26
Figure 12	Site-Generated Traffic Volumes, Weekday AM Peak Hour	27
Figure 13	Site-Generated Traffic Volumes, Weekday PM Peak Hour	28
Figure 14	Site-Generated Traffic Volumes, Saturday Mid-Day Peak Hour	29
Figure 15	2006 Total Traffic Conditions, Weekday AM Peak Hour	30
Figure 16	2006 Total Traffic Conditions, Weekday PM Peak Hour.....	31
Figure 17	2006 Total Traffic Conditions, Saturday Mid-Day Peak Hour.....	32

List of Tables

Table 1	Existing Transportation Facilities and Roadway Designations	12
Table 2	Crash Analysis Results (1/1/99 through 12/31/03)	17
Table 3	Estimated Site Trip Generation	25
Table 4	95 th -Percentile Vehicle Queuing Summary (Year 2006 Total Traffic Conditions)	34
Table 5	Operations Analysis Comparison for Scenario with No Access to North Adair Street (Year 2006 Total Weekday P.M. Peak Hour)	35
Table 6	Right-Turn Lane Warrant Analysis (Year 2006 Total Traffic Conditions)	35



Section 1

Executive Summary

Executive Summary

The Applicant, PACLAND, is proposing to develop retail center in the northwest quadrant of the North Adair Street (OR 8)/North 4th Avenue intersection in Cornelius, Oregon. The development site is primarily vacant with several homes located along the site frontage of North 4th Avenue. The proposed development is expected to be built out and operational in 2006.

This study evaluates the near-term transportation impacts associated with the proposed retail center. A majority of the site (13.25 acres) is currently zoned *C-2 Commercial* with a small portion (2.67 acres) located along the North 4th Avenue site frontage zoned *A-2 Multi-Family Residential*. As part of the development application, the Applicant is seeking to change the current site zoning from a mixture of *C-2 Commercial* and *A-2 Multi-Family Residential* to entirely *C-2 Commercial*.

Since the proposed zone change will require an amendment to the City's Comprehensive Plan, the Applicant is required to address the requirements of Oregon's Transportation Planning Rule (TPR), which implements Statewide Goal 12 (Transportation Planning). A report has been prepared under separate cover to demonstrate that the proposed new plan designation for the A-2 portion of the site can comply with the TPR (Reference 1).

The proposed development will be accessed from three external site-access driveways: one right-in/right-out driveway on North Adair Street (OR 8), and two driveways on North 4th Avenue. Permitting of the proposed site-access driveway to North Adair Street (OR 8) will require a major deviation process according to ODOT Division 51 procedures.

The results of this study show that the proposed retail center can be developed while maintaining acceptable traffic operations and safety at all study intersections and surrounding roadways in the site vicinity, assuming provision of the recommended mitigation measures. The following sections summarize the study findings and conclusions. Additional details of the study methodology, findings, and recommendations are provided within this report.

CONCLUSIONS

Existing Conditions

- During the weekday a.m., weekday p.m., and Saturday mid-day peak hours, all study area intersections currently operate within performance standards deemed acceptable by the City of Cornelius and ODOT, with the exception of the North Adair Street/North Yew Street intersection. The minor street approach in the southbound direction is currently operating at or near capacity during the weekday p.m. peak hour. This intersection operates acceptably during the other study time periods, and does not meet signal warrants.

Year 2006 Background Conditions

- Year 2006 background traffic conditions (without the proposed retail development) were estimated assuming one year of continued local and regional growth. Additionally, the traffic associated with five approved, or in-process developments identified in the site vicinity by City staff was accounted for in the analysis of year 2006 background conditions.
- Operational analysis of year 2006 background traffic conditions indicates that all of the study intersections are forecast to operate within acceptable standards during the weekday a.m.,

p.m., and Saturday midday peak hours, with the exception of the North Adair Street/North Yew Street intersection. The southbound approach to this intersection is forecast to continue operating at or near capacity during the weekday p.m. peak hour, and not meet traffic signal warrants.

Proposed Development Activities

- The site is expected to generate approximately 6,570 net new daily trips, with approximately 140 net new trips occurring during the weekday a.m. peak hour, 600 net new trips occurring during the weekday p.m. peak hour, and 940 net new trips occurring during the Saturday mid-day peak hour.
- Access to the site is proposed via three external driveways: one right-in/right out unsignalized driveway onto North Adair Street (OR 8) and two unsignalized driveways to North 4th Avenue.

Year 2006 Total Traffic Conditions:

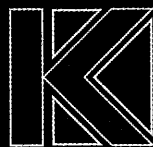
- Under forecast year 2006 total traffic conditions (with the proposed retail development), all of the study intersections are forecast to function within acceptable operating standards during the weekday a.m., p.m., and Saturday mid-day peak hours, with the exception of the North Adair Street/North Yew Street intersection. The southbound approach to this intersection is forecast to operate over capacity during the weekday p.m. peak hour and the intersection is not forecast to meet traffic signal warrants.
- A queuing analysis determined that with proposed off-site transportation improvements in place, sufficient lane storage will exist at the study intersections in the immediate site vicinity on North 4th Avenue, North Adair Street, and West Baseline Street.
- Right-turn deceleration lane warrants will be satisfied at the proposed right-in/right-out driveway on North Adair Street (OR 8) under the weekday p.m. and Saturday mid-day peak hours.
- Although ODOT left-turn lane warrant criteria will be satisfied along North 4th Avenue at the southern site-access driveway, the traffic operations and vehicle queuing analysis results indicate there is no need for a left-turn lane.
- Without the proposed right-in/right-out site-access driveway to North Adair Street, the level-of-service and volume-to-capacity ratio will degrade at the upstream intersection at North Adair Street and North 4th Avenue, relative to conditions where the proposed site-access driveway is in place along North Adair Street.
- Based on the proposed access spacing for the right-in/right-out driveway to North Adair Street (OR 8), a major deviation process through ODOT will be necessary to secure an access permit.

RECOMMENDATIONS

- Widen North 4th Avenue to a four-lane cross-section between the North Adair Street and West Baseline Street (OR 8) couplet to accommodate side-by-side left turn lanes northbound and southbound.
- Construct a right-turn deceleration lane on North Adair Street (OR 8) at the proposed right-in/right-out site driveway. Proper design treatment would consist of 20 feet of pavement

width to accommodate a 5-foot bicycle lane and a 15-foot right-turn deceleration lane. This would be separate from the pavement width that currently defines the two 12-foot westbound through travel lanes on the highway. The lane could be developed starting at the existing bus pullout located on the north side of North Adair Street (OR 8) and extended to the driveway location. Additionally, a bulb-out should be provided on the west corner of the driveway to force right-turning traffic exiting from the driveway to access the outside westbound through travel lane, while providing enough pavement width for a 5-foot bicycle lane.

- Construct a separate southbound right-turn lane with approximately 50 feet of striped storage at the North 4th Avenue/North Adair Street (OR 8) intersection in conjunction with site build-out.
- Landscaping along the site frontage of North Adair Street (OR 8) and North 4th Avenue should be maintained to ensure adequate sight distance at all site-access driveways.



Section 2

Introduction

Introduction

PROJECT DESCRIPTION

PACLAND is proposing to develop a retail center in the northwest quadrant of the North Adair Street (OR 8)/North 4th Avenue intersection in Cornelius, Oregon. The site, whose location is illustrated in Figure 1, is primarily vacant. There are several homes on the east side of the property bordering North 4th Avenue. These homes will be removed prior to the start of construction. Full build out of the proposed retail development is scheduled for the year 2006. Figure 2 illustrates the proposed site plan.

SCOPE OF THE REPORT

The analysis contained in this report identifies the transportation-related impacts associated with the proposed development application and was prepared in accordance with City of Cornelius and Oregon Department of Transportation (ODOT) requirements. The study intersections and overall study area for this project are shown in Figure 1 and were selected based on a review of the local transportation system, ODOT Division 51 criteria, and direction provided by City of Cornelius and ODOT Staff in a series of scoping letters, which are provided in *Appendix A*. Operational analyses were performed at the following study intersections:

- Pacific Avenue (OR 8)/Quince Street (OR 47);
- Pacific Avenue (OR 8)/Mountain View Lane;
- North Adair Street (OR 8)/North Yew Street;
- West Baseline Street (OR 8)/North Yew Street;
- North Adair Street (OR 8)/North 4th Avenue;
- West Baseline Street (OR 8)/South 4th Avenue;
- North Holladay Street/North 10th Avenue;
- North Adair Street (OR 8)/North 10th Avenue;
- West Baseline Street (OR 8)/South 10th Avenue;
- South 4th Avenue/Heather Street; and,
- South 10th Avenue/Dogwood Street.

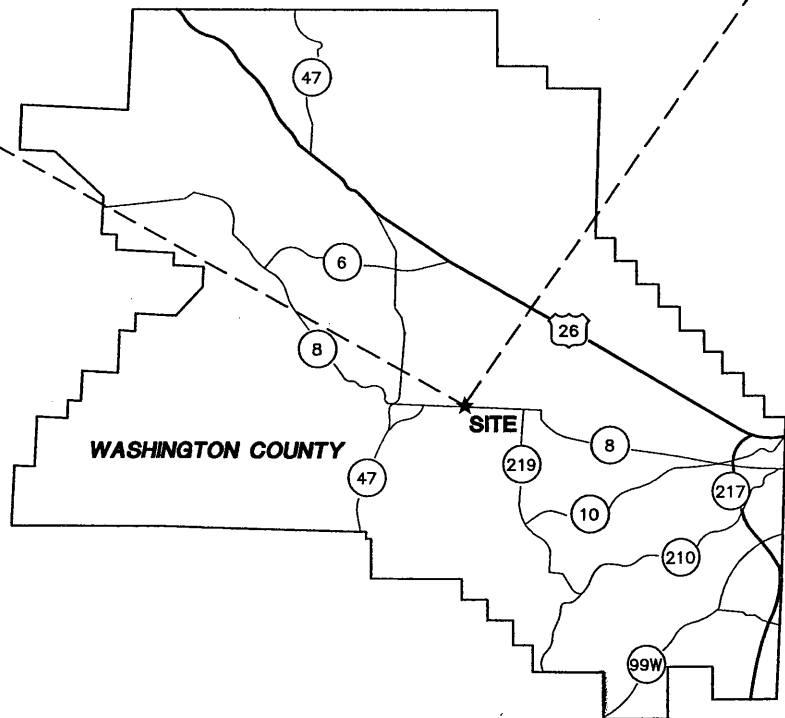
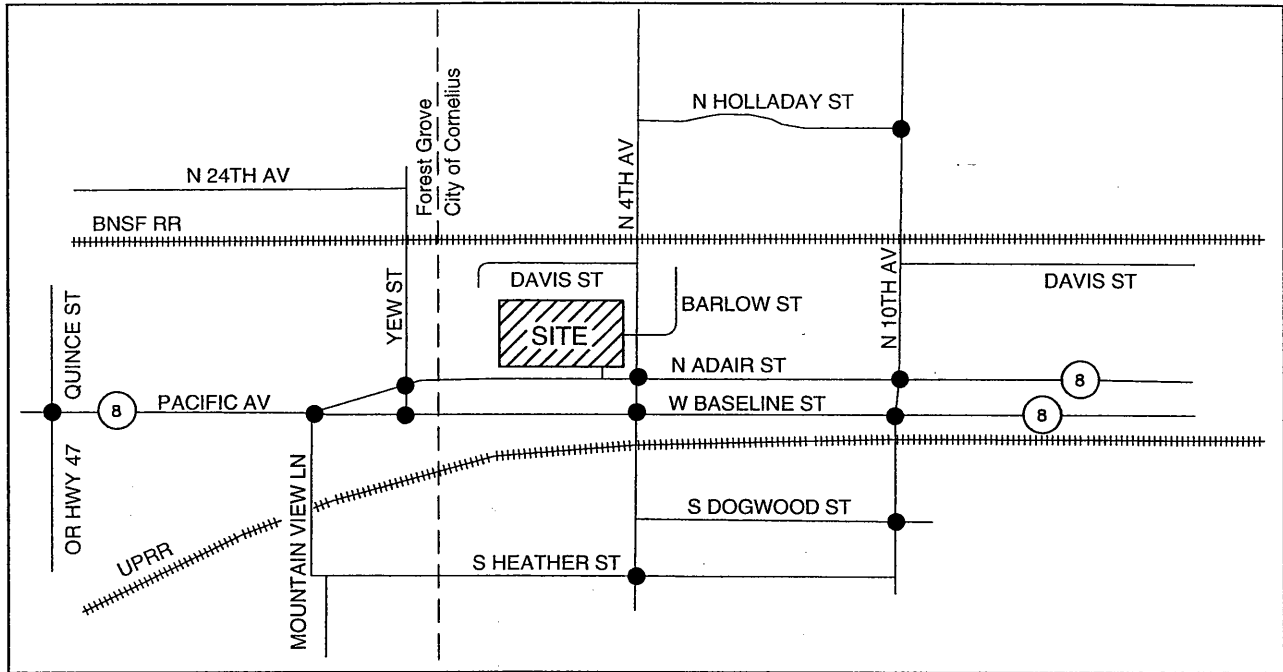
This report addresses the following transportation issues:

- Existing land use and transportation system conditions within the site vicinity;
- Existing traffic safety;
- Planned developments and transportation improvements in the study area;
- Forecast year 2006 background traffic conditions during the weekday a.m., weekday p.m., and Saturday mid-day peak periods;
- Trip generation and distribution estimates for the proposed development;
- Forecast year 2006 total traffic conditions with full build-out of the site during the weekday a.m., p.m. and Saturday mid-day peak periods;
- A review of on-site traffic operations and circulation, vehicle queuing, and turn lanes needs;
- A review of Division 51 Deviation Permitting Process; and,
- Conclusions and recommendations.

It should be emphasized that this study was prepared to address the transportation impacts of the proposed development application, assuming the entire site property has been rezoned to *C-2 Highway Commercial*. As stated previously, a report has been prepared under separate cover to demonstrate that the proposed new plan designation can comply with the Transportation Planning Rule (Reference 1).



(NO SCALE)



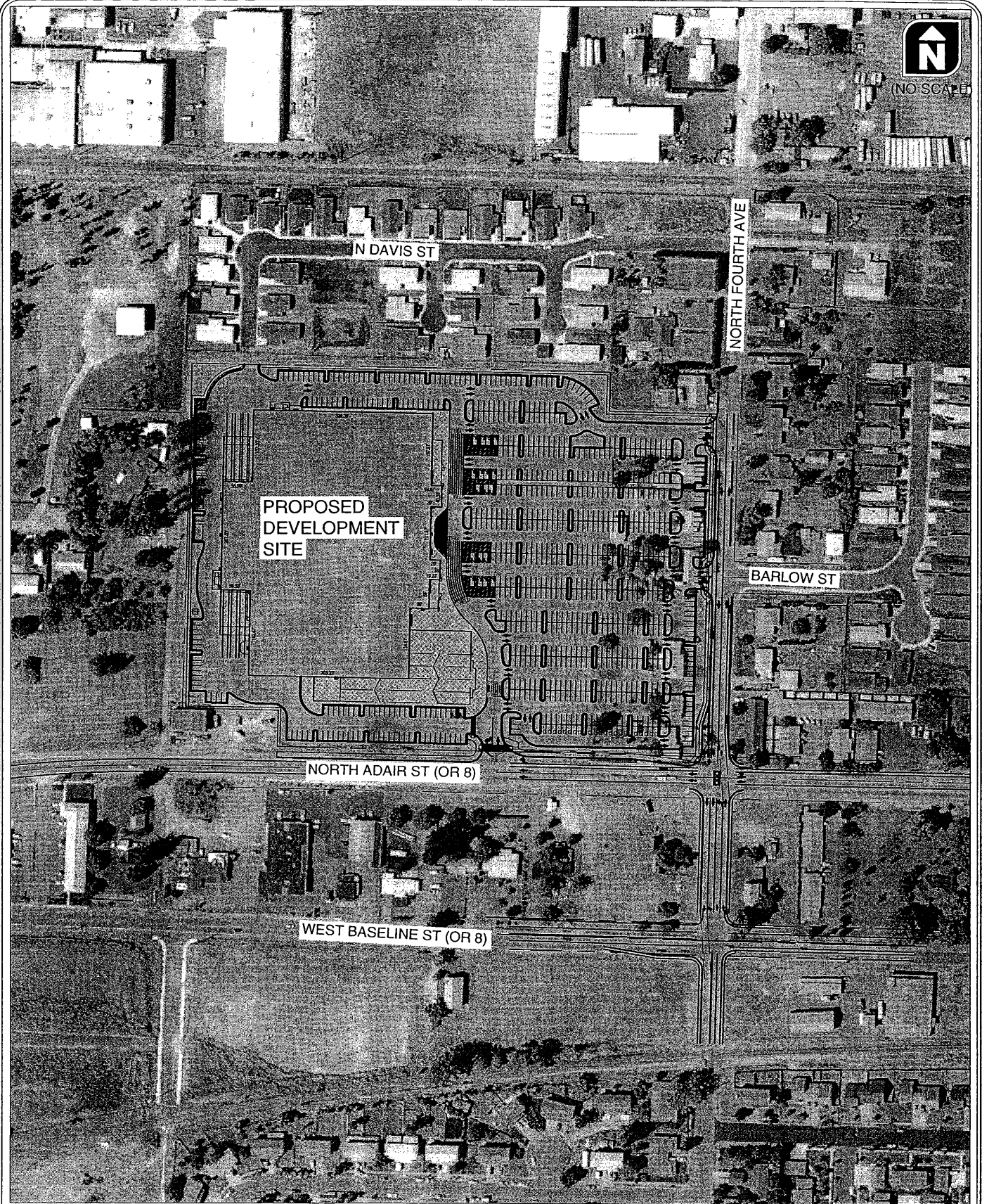
LEGEND

- - STUDY INTERSECTION

**SITE VICINITY MAP
CORNELIUS, OREGON**

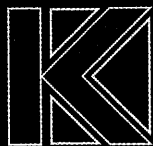
**FIGURE
1**

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PROPOSED SITE PLAN
CORNELIUS, OREGON

FIGURE
2



Section 3

Existing Conditions

Existing Conditions

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions.

The site of the proposed development was visited and inventoried in April 2005. At that time, information was collected regarding site conditions, adjacent land uses, existing traffic volumes, operations, and transportation facilities in the study area.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed development site is primarily vacant and is currently zoned *C-2 Highway Commercial* (13.25 acres) and *A-2 Multi-Family Residential* (2.67 acres). The site is bordered to the north by residential homes along North Davis Street, to the west by commercial and industrial properties, to the east by residences along North 4th Avenue, and to the south by a mixture of homes businesses along North Adair Street (OR 8).

TRANSPORTATION FACILITIES

Roadway Facilities

As indicated in Figure 1, primary access to the site will be provided via one right-in/right-out site access driveway onto the site frontage of North Adair Street (OR 8) and two driveways along the site frontage of North 4th Avenue. The southern driveway on North 4th Avenue will align directly across from North Barlow Street to the east.

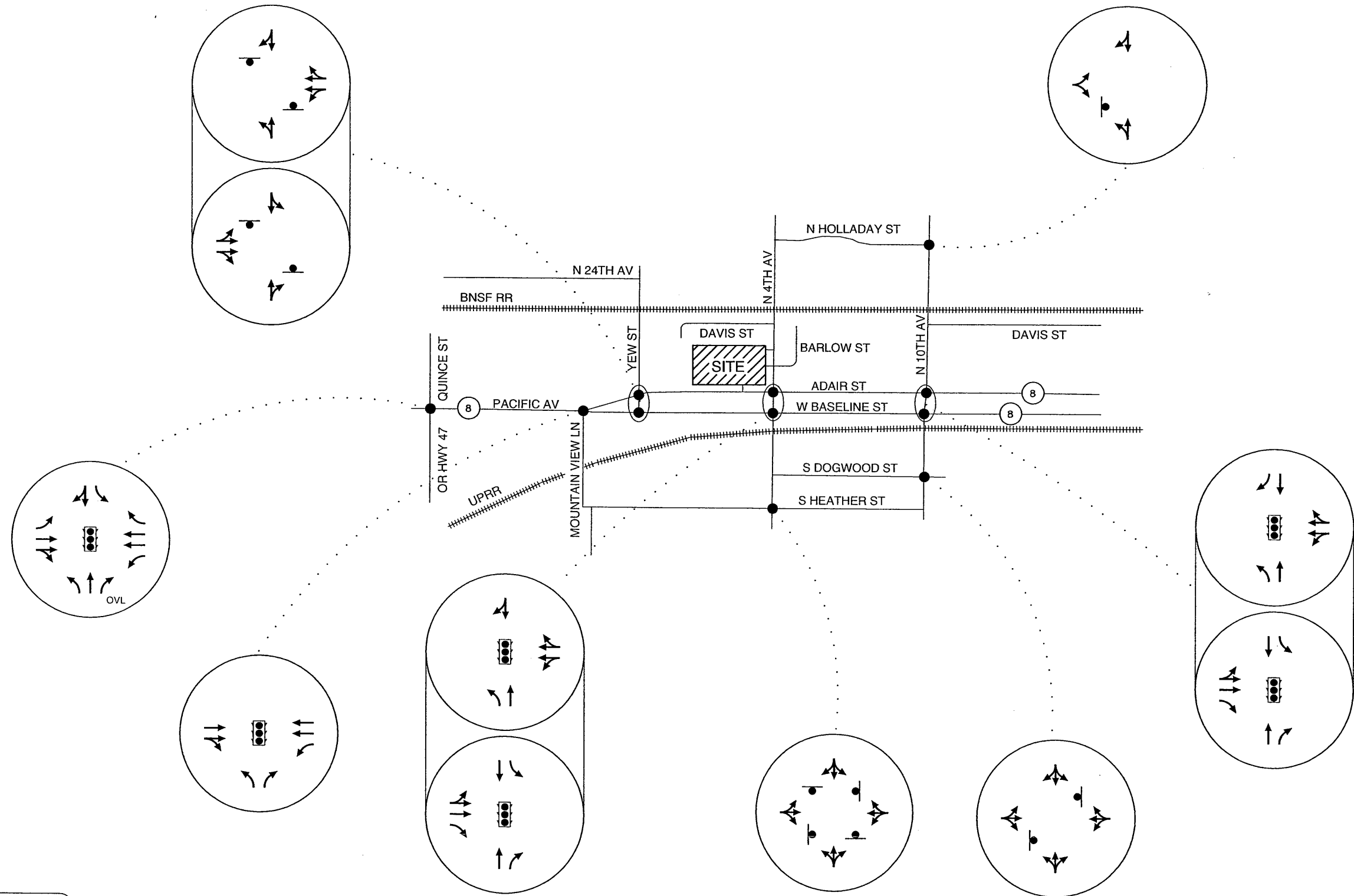
North Adair Street (westbound) is a part of the OR 8 one-way couplet formed with West Baseline Street (eastbound). North Adair Street and West Baseline Street are both two-lane highway facilities with a posted speed limit of 30 to 40 miles-per-hour in the site vicinity. They are operated and maintained by the Oregon Department of Transportation (ODOT). Further west, North Adair Street and West Baseline Street combine into a single five-lane facility along Pacific Avenue.

North 4th Avenue is classified as a *Major Collector* and is under the jurisdiction of the City of Cornelius. In the vicinity of the site, North 4th Avenue has one travel lane in each direction. The posted speed limit is 25 miles-per-hour.

Table 1 provides a more detailed summary of the existing conditions along the roadway facilities evaluated in this study and Figure 3 identifies the existing lane configurations and traffic control devices at all identified study intersections.



Pedestrian and Bicycle Facilities

No sidewalk currently exists past the existing TriMet bus pullout on the north side of North Adair Street along the site frontage, though a westbound bicycle lane is provided in the vicinity of the site. No sidewalks or bike lanes are provided along the site frontage of North 4th Avenue and bicycle and pedestrian activity along the streets surrounding the site were observed to be low.



OVL - OVERLAP

LEGEND

-  - STOP SIGN
-  - TRAFFIC SIGNAL

EXISTING LANE CONFIGURATIONS
AND TRAFFIC CONTROL DEVICES
CORNELIUS, OREGON

FIGURE
3

Table 1
Existing Transportation Facilities and Roadway Designations

Roadway	Classification	Cross Section	Speed Limit	Side-walks	Bicycle Lanes	On-Street Parking
North Adair Street (OR 8 - Westbound)	Statewide Highway (ODOT)	2-lane	30/40 mph	Yes ¹	Yes	No
West Baseline Street (OR 8 - Eastbound)	Statewide Highway (ODOT)	2-lane	30/40 mph	Yes ²	Yes	No
Quince Street (OR 47)	Statewide Highway (ODOT)	3-lane	40 mph	Yes	Yes	No
Pacific Avenue (OR 8)	Statewide Highway (ODOT)	5-lane	40 mph	Partial	Yes	No
Mountain View Lane	Local Street (City of Forest Grove)	2-lane	25 mph	Yes	Yes	No
North Yew Street	Local Street (City of Forest Grove)	2-lane	N.P.	Partial	No	No
4 th Avenue	Major Collector (City of Cornelius)	2-lane	25 mph	Yes	No	No
10 th Avenue	Major Collector (City of Cornelius)	2-lane	25 mph	Yes ³	No	Yes ⁴
North Holladay Street	Local Street (City of Cornelius)	2-lane	N.P.	Partial	No	No
Heather Street	Local Street (City of Cornelius)	2-lane	25 mph	Partial	No	Partial
Dogwood Street	Local Street (City of Cornelius)	2-lane	25 mph	Partial	No	Partial

¹ A continuous sidewalk is provided on the north side of North Adair Street, east of 4th Avenue. A sidewalk is also located in the vicinity of the bus pullout along the site frontage.

² A continuous sidewalk is provided on the south side of West Baseline Street, east of 4th Avenue.

³ Sidewalks are provided intermittently along North 10th Avenue, primarily along the west side of the street.

⁴ Parking is allowed immediately north of North Adair Street on both sides of North 10th Avenue.

Transit Facilities

Tri-Met bus service is currently provided along the site frontages of North Adair Street (Reference 2). In the general site vicinity, Route 57: *TV Hwy/Forest Grove*, provides service between Forest Grove and the Beaverton Transit Center, travels westbound along North Adair Street and eastbound along West Baseline Street in the vicinity of the site. Service is provided at approximately 15-minute headways every day of the week.

TRAFFIC VOLUMES AND PEAK HOUR OPERATIONS

Manual turning movement counts were obtained at the study intersections in the vicinity of the site on a mid-week day and Saturday in April and August 2005. All traffic counts were conducted during the weekday morning (7:00 a.m. – 9:00 a.m.), weekday evening (4:00 p.m. - 6:00 p.m.) and Saturday mid-day (11:00 a.m. - 1:00 p.m.) peak periods. The turning movement counts from the weekday a.m., p.m., and Saturday mid-day peak hours were summarized and rounded to the nearest five vehicles per hour as shown in Figures 4, 5, and 6. The weekday morning peak hour for the entire study area was found to occur between 7:15 and 8:15 a.m., the weekday evening peak hour between 4:30 and 5:30 p.m., and the Saturday mid-day peak hour between 12:00 and 1:00 p.m. No seasonal adjustment factor was applied to the existing base counts, as the area is urban in nature, and historical counts collected by ODOT in the vicinity of the site on North Adair Street and West Baseline Street show no significant seasonal peak characteristics. *Appendix "B" contains the traffic count sheets used in this study.*

Current Levels of Service

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 3). *A description of level of service and the criteria by which they are determined is presented in Appendix "C."* Appendix "C" also indicates how level of service is measured and what is generally considered the acceptable range of level of service.

The North Adair Street-West Baseline Street couplet and Pacific Avenue are part of Oregon Highway 8 (OR 8) which is classified as a *Statewide Highway* by ODOT. The Highway Mobility Standards presented in the *1999 Oregon Highway Plan* (Reference 4) state that a volume-to-capacity (v/c) ratio of 0.99 or less must be maintained at all intersections located on *Statewide Highways* for the highest two consecutive hours of weekday traffic volumes. This policy applies to all study intersections along Pacific Avenue, North Adair Street and West Baseline Street, as well as the proposed site-access driveway along North Adair Street. There is an exception to this standard for the two study intersections located at North 10th Avenue/North Adair Street and North 10th Avenue/West Baseline Street. Recently, a land use regulation was passed to designate the area east of North 10th Avenue as a *Special Transportation Area*, which now engenders a mobility standard of a v/c ratio of 1.10 or less for the first peak hour and a v/c ratio of 0.99 or less for the second peak hour.

The remaining study intersections along North 4th Avenue, Holladay Street, Heather Street, and Dogwood Street are in the city limits of Cornelius and under the jurisdiction of the City. The City of Cornelius's development review policy supports a LOS "E" or better standard for signalized intersections and LOS "E" or better for unsignalized intersections.

To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15-minute flow rates during the weekday a.m., p.m., and Saturday mid-day peak hours were used in the evaluation of all intersection levels of service and volume-to-capacity ratios. For this reason, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average peak hour. Traffic conditions during all other weekday hours will likely operate under better conditions than those described in this report.

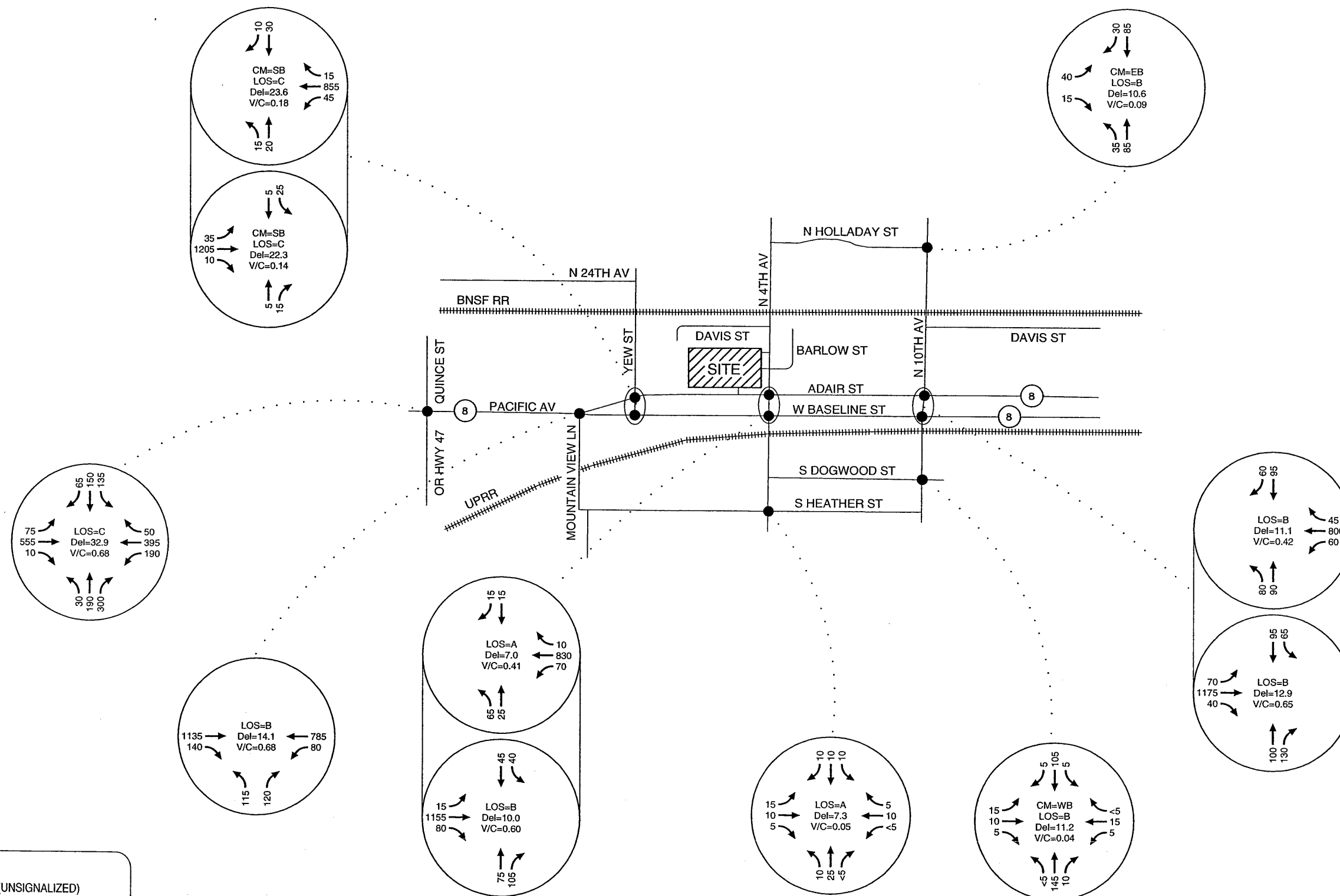
Using the weekday a.m., weekday p.m., and Saturday mid-day peak hour traffic volumes, volume-to-capacity ratios and levels of service were calculated for all the study intersections as shown in Figures 4, 5, and 6. As indicated in the figures, all but one of the study intersections are shown to operate at acceptable levels of service during these time periods. The southbound minor street approach at the North Adair Street/Yew Street intersection is currently functioning at LOS F with a v/c ratio at 1.0 during the weekday p.m. peak hour. An analysis of signal warrants for this intersection, using ODOT methodologies, indicates a traffic signal is not warranted at this time. *Appendix "D" includes the existing conditions level-of-service worksheets and the results of the signal warrants analysis.*

Traffic Safety

The crash histories of study intersections in the vicinity of the site were reviewed in an effort to identify potential intersection safety issues. Crash records were obtained from ODOT for the most recent five-year period from January 1, 1999 through December 31, 2003. *All crash data including the calculations for crash rates are provided in Appendix "E" of this report.* A summary of the crash data is provided in the following paragraphs.



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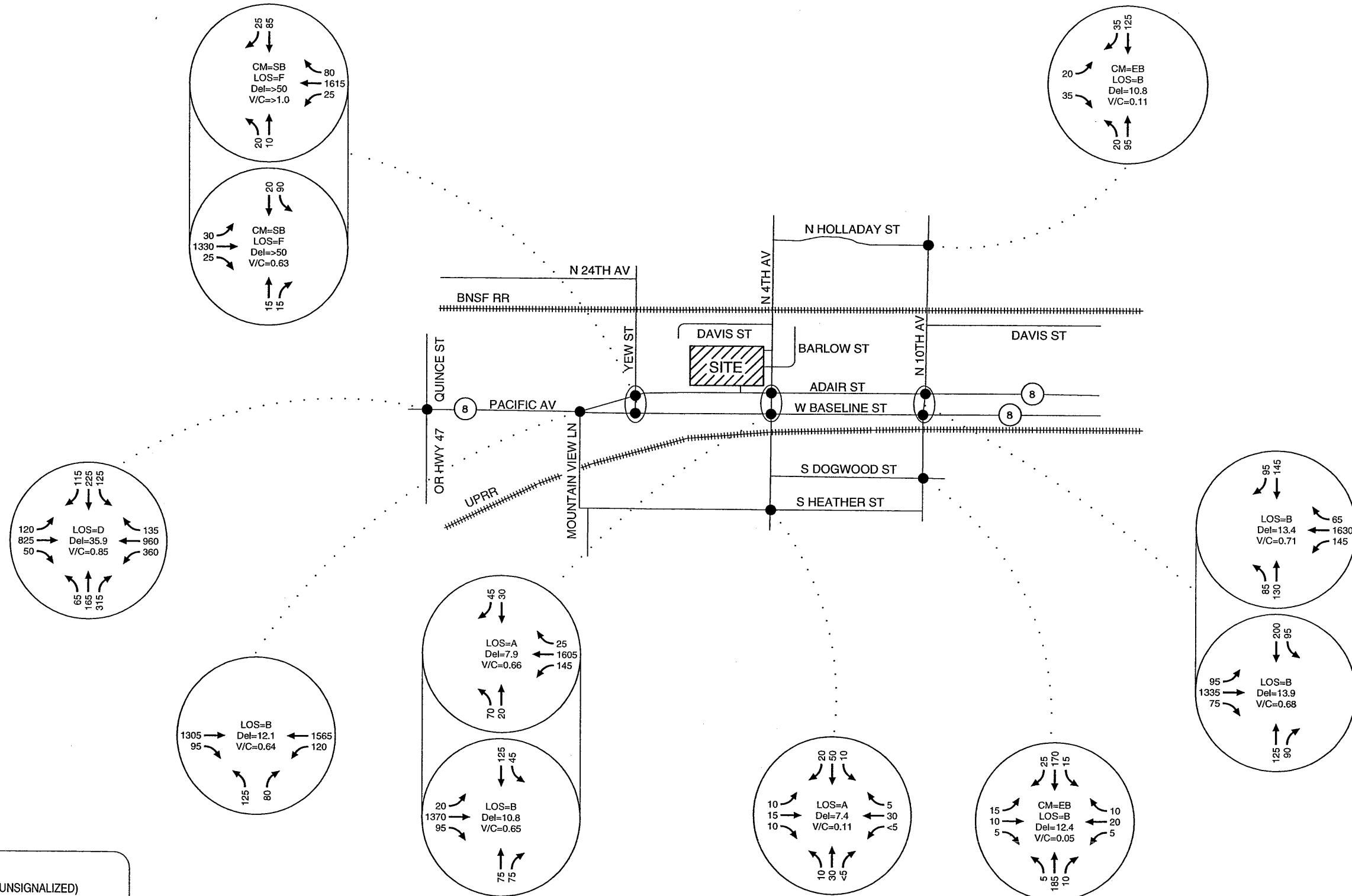
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 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
 OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY
 (SIGNALIZED)/CRITICAL MOVEMENT CONTROL
 DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**EXISTING TRAFFIC CONDITIONS
 WEEKDAY AM PEAK HOUR
 CORNELIUS, OREGON**

**FIGURE
 4**



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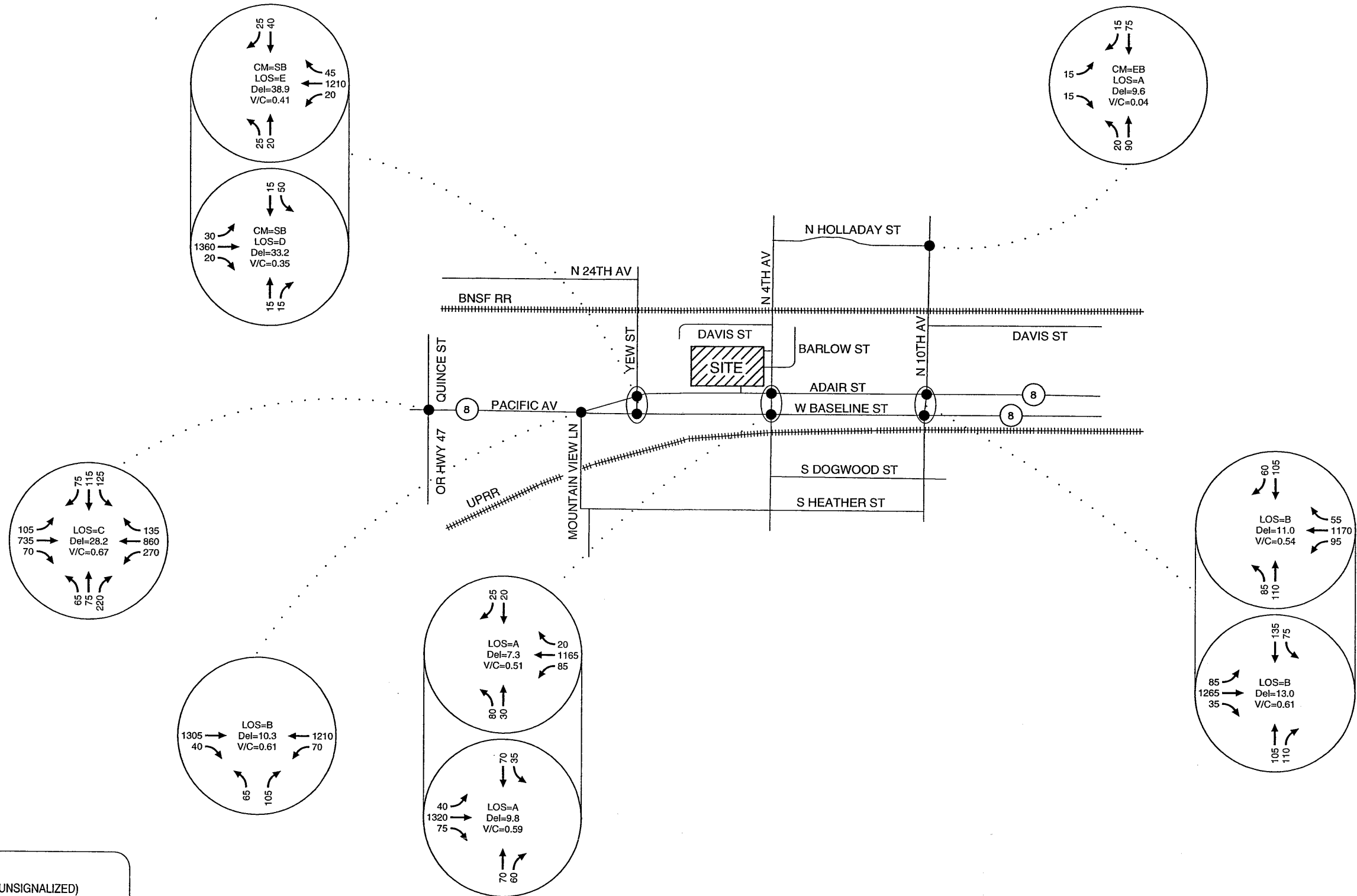
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 LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**EXISTING TRAFFIC CONDITIONS
WEEKDAY PM PEAK HOUR
CORNELIUS, OREGON**

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LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
 OF SERVICE (UNSIGNALIZED)
 Del = INTERSECTION AVERAGE CONTROL DELAY
 (SIGNALIZED)/CRITICAL MOVEMENT CONTROL
 DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**EXISTING TRAFFIC CONDITIONS
 SATURDAY MIDDAY PEAK HOUR
 CORNELIUS, OREGON**

Crash rates of intersections are often expressed in crashes per million entering vehicles (MEV) for evaluation purposes. These calculations are presented in Table 2 and show that the North Adair Street/North 4th Avenue intersection has a relatively high crash rate in comparison to the other study intersections. Based on these rates, the patterns amongst the crashes were evaluated to determine if there are any operational or geometric deficiencies that are potentially contributing to the crash patterns.

Table 2
Crash Analysis Results
(1/1/99 through 12/31/03)

Intersection	Total Crashes	Type					Severity			Crash Rate (Acc/MEV)
		Rear-End	Turn	Angle	Back	Other	PDO	Inj.	Fat.	
Pacific Avenue / Mountain View Lane	18	14	4	0	0	0	8	10	0	0.30
North Adair Street / North 4 th Avenue	29	1	6	21	0	1	11	18	0	0.82
West Baseline Street / South 4 th Avenue	21	2	4	15	0	0	9	11	0	0.64
North Adair Street / North 10 th Avenue	29	5	9	14	0	1	16	13	0	0.69
West Baseline Street / South 10 th Avenue	8	2	2	4	0	0	3	5	0	0.22
North Holladay Street / North 10 th Avenue	0	0	0	0	0	0	0	0	0	0.00

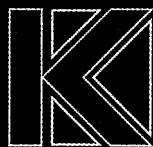
Note: Fat. = Fatalities, Inj. = Injuries, PDO = Property Damage Only

Acc/MEV = Accidents per million entering vehicles

At the North Adair Street/North 4th Avenue intersection, there have been a disproportionately high number of turning/angle crashes reported in the most recent five years of data. A close inspection of the collisions revealed that the majority of the turning and angle crashes occurred when northbound left-turning drivers on North 4th Avenue attempted to turn left during the red signal phase, which is allowed by Oregon law when drivers approach an intersecting one-way street with traffic flowing to the left. These types of crashes are likely due to the heavy traffic flows on the east-west mainline and northbound left-turning drivers misjudging appropriate gaps to turn into the traffic stream at the signal. Adequate sight distance exists for drivers at this location, and no specific geometric deficiency is apparent. Given a lack of any obvious geometric or sight distance deficiency, no short-term safety improvements are recommended at this intersection, save for posting a “No Left-Turn on Red” sign.

Although the historical crash rate is not relatively high for the West Baseline Street/South 4th Avenue intersection, there have been a disproportionately high number of angle-type accidents. A review of the accident records shows that most of these crashes occurred when drivers traveling straight through the intersection on the northbound or southbound approaches disregarded the traffic signal control and hit an eastbound vehicle traveling straight through the intersection. A potential measure to improve safety at this intersection would be to increase the vehicle clearance time between signal phases to better clear vehicles between signal phases. The same angle-type accident pattern has also occurred at the other study intersection located at North Adair Street and North 10th Avenue, where an increase in the clearance time may improve driver safety.

Based on the safety findings, it is recommended that ODOT study the above three study intersections to further investigate measures to reduce the number of angle-type collisions.



Section 4

Transportation Impact Analysis

Transportation Impact Analysis

The transportation impact analysis identifies how the study area's transportation system will operate in the year that the proposed development will be fully built-out and occupied. The impact of traffic generated by the proposed retail development during typical weekday a.m., weekday p.m., and Saturday mid-day peak hours was examined as follows:

- Planned developments and transportation improvements in the site vicinity were identified and reviewed;
- Background weekday a.m., weekday p.m., and Saturday mid-day peak hour traffic conditions for the year 2006 were analyzed. A one-year growth rate of 1.0 percent was applied to existing traffic volumes to account for regional growth in the site vicinity. Also, an accounting was made of traffic from five in-process developments in the site vicinity;
- Future daily, weekday a.m., weekday p.m., and Saturday mid-day peak hour site-generated trips were estimated for build-out of the site;
- A trip distribution pattern was derived through a review of existing traffic volumes, local transportation facilities, the location of other similar retail establishments, and a select zone analysis obtained from Washington County using the regional traffic model;
- Predicted site-generated traffic from the development was added to the background traffic volumes to evaluate year 2006 total traffic operations at the study area intersections during the weekday a.m., weekday p.m., and Saturday mid-day peak hours;
- An analysis of turn lane requirements and vehicle queuing was conducted;
- On-site circulation and safety for pedestrians, passenger cars, and delivery trucks was evaluated; and,
- Appropriate future mitigations were identified.

Planned Developments and Transportation Improvements

As part of this analysis, Kittelson & Associates, Inc. identified and reviewed planned developments and transportation improvements within the site vicinity. Based on conversations with staff from the City of Cornelius and ODOT, the following five in-process developments were identified:

- Walgreens Pharmacy (North Adair St/19th Ave);
- Hobbs Farm Estates (North Holladay St/19th Ave);
- Natures Ridge (North Holladay/19th Ave);
- Davis Street Apartment Complex (North Adair St between 12th Ave& 13th Ave); and
- Residential Development (North Adair St/ 8th Ave).

There are no planned transportation improvements in the vicinity of the site in the immediate future that would significantly alter existing travel patterns.

2006 BACKGROUND TRAFFIC CONDITIONS

The background traffic analysis identifies how the study area's transportation system will operate when the proposed retail development is expected to open in the year 2006. This analysis includes traffic growth due to general growth in the region and traffic from identified in-process developments, but does not include traffic from the proposed development.

Traffic Volumes

Year 2006 background traffic volumes were developed by applying a one-year growth rate of 1.0 percent to existing traffic volumes to account for regional traffic growth over the next year. This growth rate was calculated from historical traffic counts conducted by ODOT near the proposed development site on North Adair Street and West Baseline Street over the ten-year period between 1994 and 2003. *Appendix “F” contains the growth rate calculation worksheet.* The background traffic volume estimates also account for the increased traffic from identified in-process developments in the site vicinity. Figures 7, 8, and 9 illustrate the resulting forecast year 2006 background traffic volumes.

Level-of-Service Analysis

Using the weekday a.m., weekday p.m., and Saturday mid-day peak hour turning movement volumes shown in Figures 7, 8, and 9, an operational analysis was conducted at each study intersection to determine the 2006 background traffic conditions. Figures 7, 8, and 9 also present the analysis results for the weekday a.m., weekday p.m., and Saturday mid-day peak hours, respectively. As shown, all but one of the study intersections are forecast to operate with acceptable levels of service and volume-to-capacity ratios during all study time periods. As in the Existing Conditions section of this study, the intersection of North Adair Street and North Yew Street will continue to function at LOS F with a v/c ratio at or greater than 1.0 during the weekday p.m. peak hour. An analysis of signal warrants for this intersection, using ODOT methodologies, indicates a traffic signal will not be warranted. *Appendix “G” contains the year 2006 background level-of-service worksheets and signal warrant worksheet.*

PROPOSED DEVELOPMENT PLAN

PACLAND proposes to construct a retail center in the northwest quadrant of the North Adair Street (OR 8)/North 4th Avenue intersection. The site is proposed to have three external site-access driveways: one unsignalized right-in/right-out driveway to North Adair Street, and two unsignalized full access driveways on North 4th Avenue.

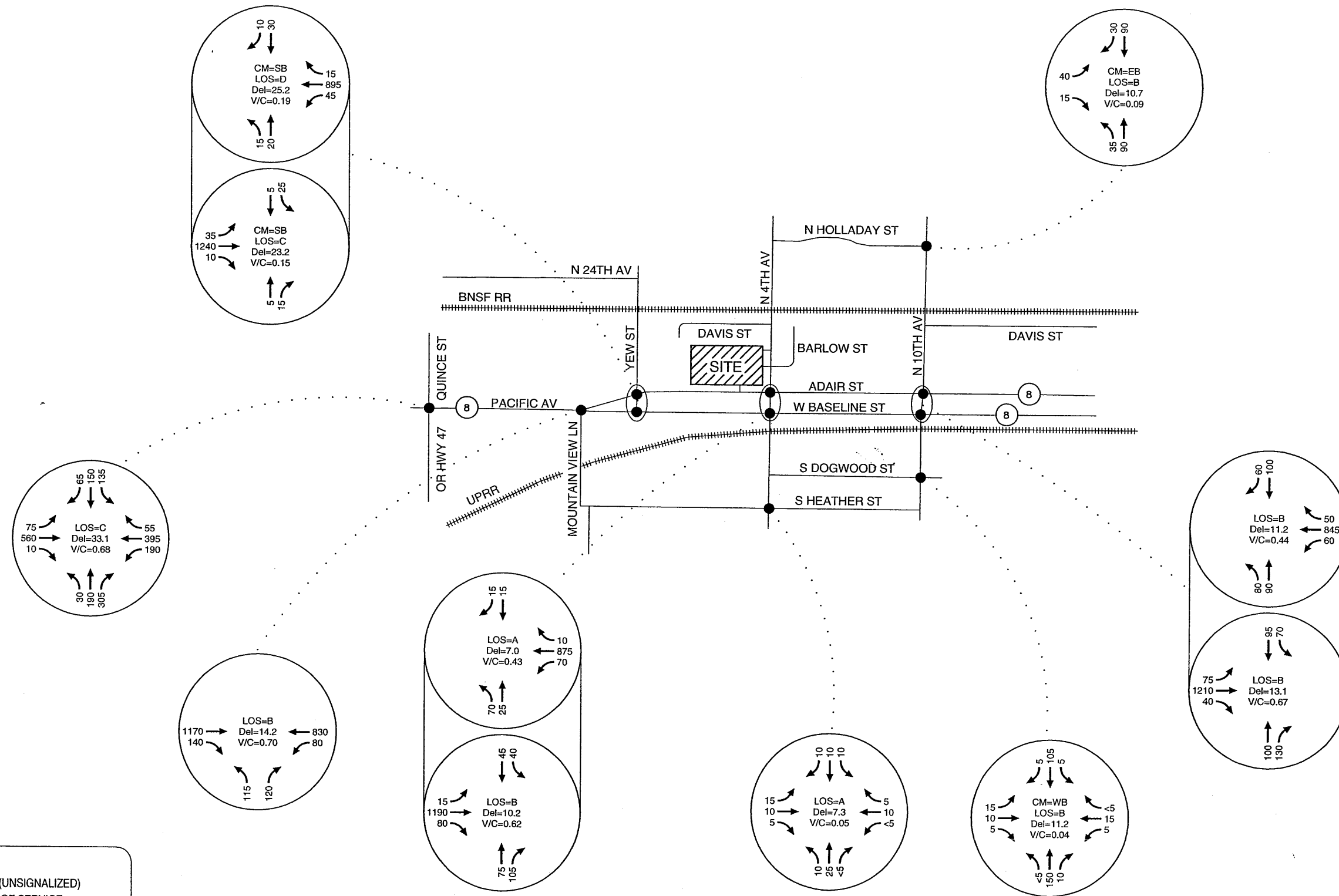
Assumed lane configurations and traffic control devices for the study intersections including the proposed site access driveways are shown in Figure 10. It should be emphasized the current development proposal shows North 4th Avenue widened to a four-lane cross section between the OR 8 couplet of North Adair Street and West Baseline Street in conjunction with site build out. Sufficient right-of way exists between the east-west couplet streets to provide side-by-side northbound and southbound left-turn lanes to accommodate the anticipated left-turning queues at these two locations, as well as to the north and south of the couplet for an adequate transition taper. The proposed site plan proposal also includes a right-turn deceleration lane into the site access driveway to North Adair Street, and a right-turn lane on the southbound approach to the North Adair Street/North 4th Avenue intersection.

TRIP GENERATION

Estimates of daily, weekday a.m., weekday p.m., and Saturday mid-day peak hour vehicle trip ends for the proposed retail center were developed based on empirical observations at similar developments. These observations are summarized in the standard reference *Trip Generation, 7th Edition*, published by the Institute of Transportation Engineers (Reference 5), for a *Shopping Center* land use. In addition, pass-by trip data for similar retail developments was obtained from the Institute of Transportation Engineers' *Trip Generation Handbook* (Reference 6). Based on the ITE data, a 34 percent pass-by trip reduction for the weekday and 26 percent for Saturday was used in this analysis. Table 3 summarizes the estimated site trip generation during a typical weekday as well as during the weekday p.m. and Saturday mid-day peak hours (all trip ends shown in Table 3 have been rounded to the nearest five trips).



(NO SCALE)

**LEGEND**

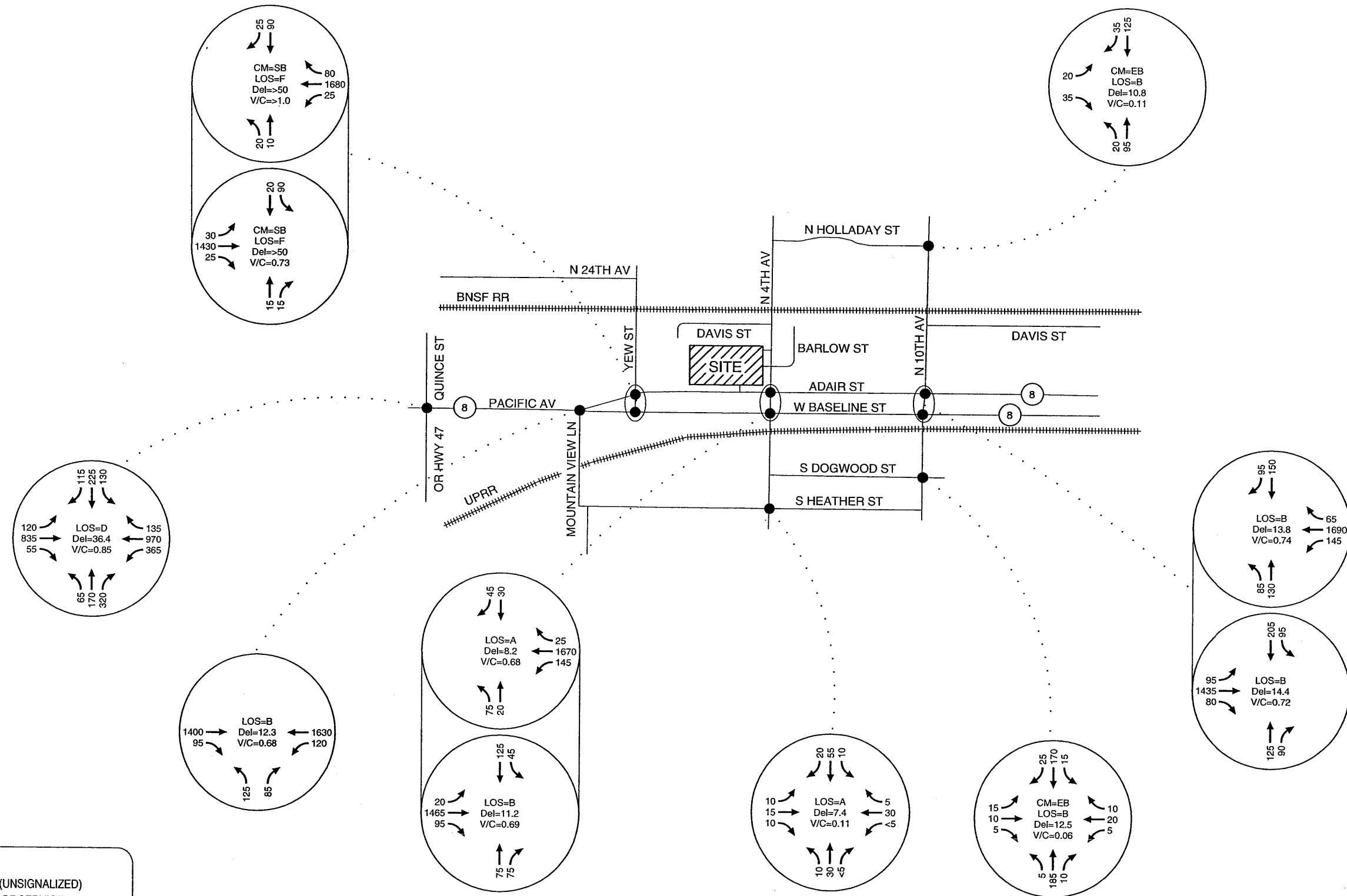
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 (SIGNALIZED)/CRITICAL MOVEMENT CONTROL
 DELAY (UNSIGNALIZED)
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

2006 BACKGROUND TRAFFIC CONDITIONS
 WEEKDAY AM PEAK HOUR
 CORNELIUS, OREGON

FIGURE
7



(NO SCALE)

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
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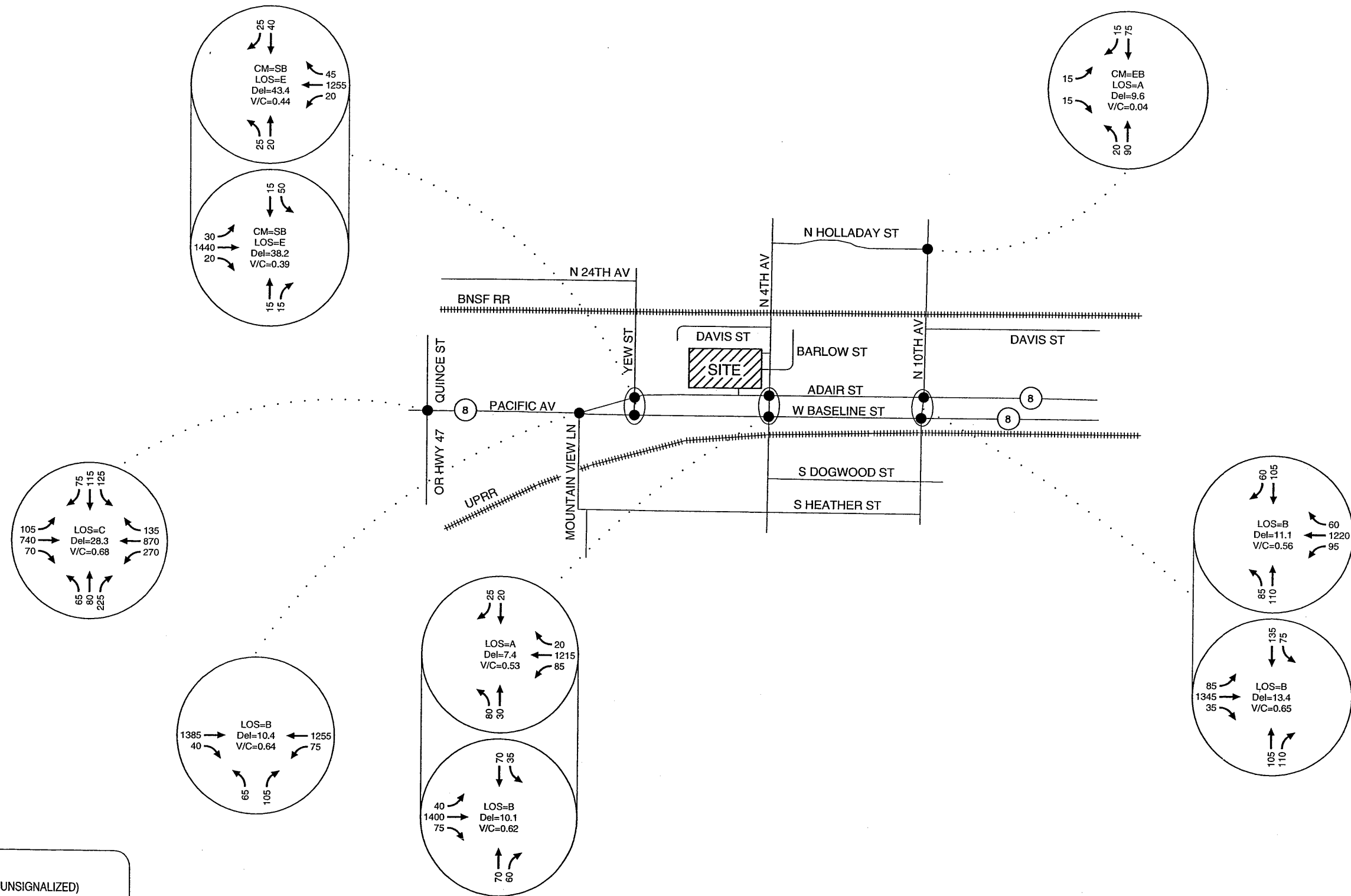
2006 BACKGROUND TRAFFIC CONDITIONS
 WEEKDAY PM PEAK HOUR
 CORNELIUS, OREGON

FIGURE

8



(NO SCALE)

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
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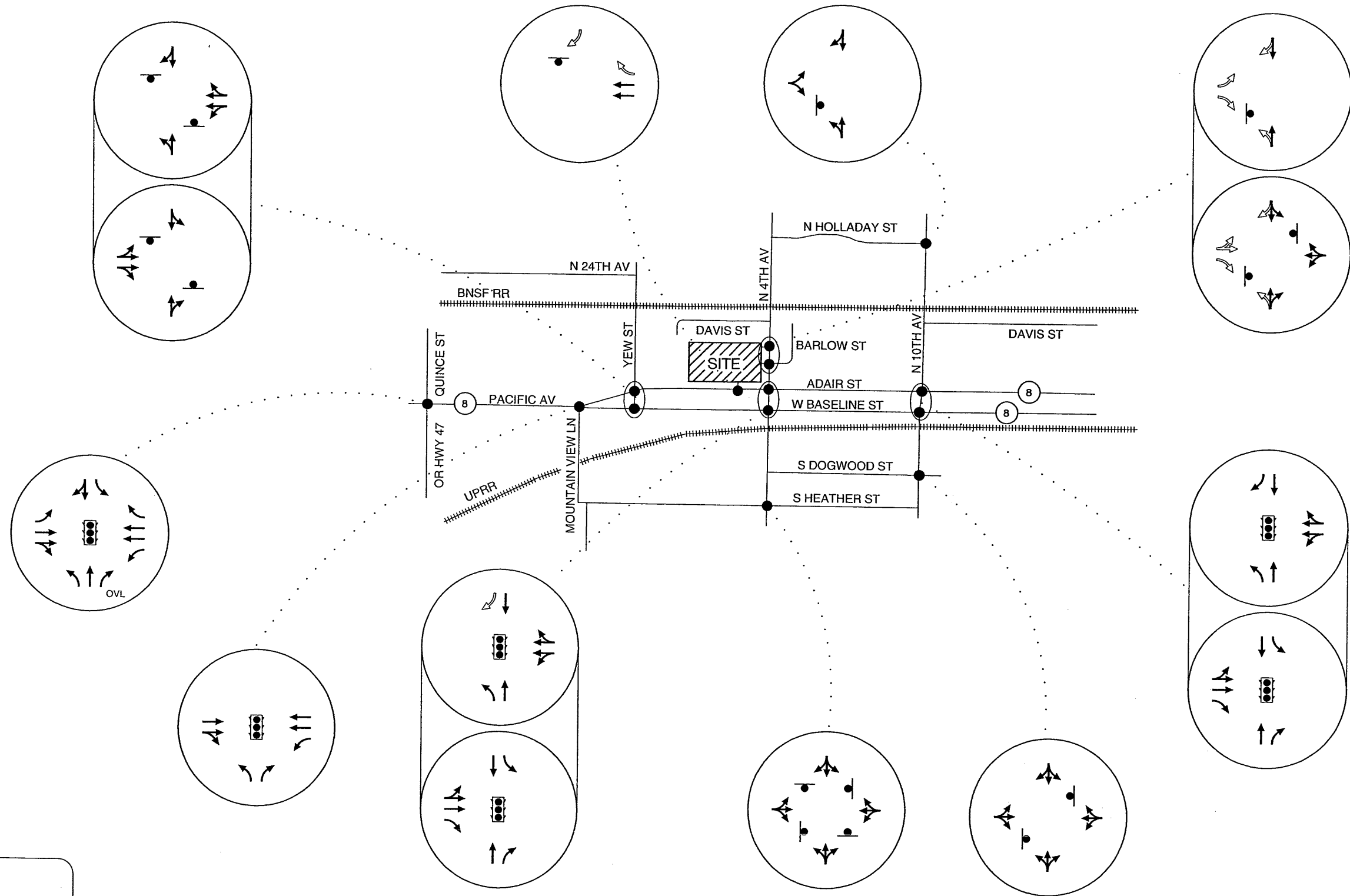
**2006 BACKGROUND TRAFFIC CONDITIONS
 SATURDAY MIDDAY PEAK HOUR
 CORNELIUS, OREGON**

FIGURE

9



(NO SCALE)



OVL - OVERLAP

LEGEND

- ➡ - NEW MOVEMENT
- - STOP SIGN
- 🚦 - TRAFFIC SIGNAL

ASSUMED LANE CONFIGURATIONS
AND TRAFFIC CONTROL DEVICES
CORNELIUS, OREGON

FIGURE
10

Table 3
Estimated Site Trip Generation

Land Use	ITE Code	Size (sq. ft.)	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips			Saturday Mid-Day Peak Hour Trips		
				Total	In	Out	Total	In	Out	Total	In	Out
Shopping Center	820	179,902	9,950	220	135	85	920	440	480	1,270	660	610
Pass-by trip reduction (34% Daily/AM/PM 26% Sat)			(3,380)	(80)	(40)	(40)	(320)	(160)	(160)	(330)	(165)	(165)
Net New Trips			6,570	140	95	45	600	280	320	940	495	445

As shown in Table 3, the proposed development is expected to generate approximately 9,950 total daily trips of which approximately 220 total trips will occur during the weekday a.m. peak hour, 920 during the weekday p.m. peak hour, and 1,270 total trips will occur during the Saturday mid-day peak hour. Assuming a pass-by trip reduction factor of 34 percent for daily, weekday a.m., and weekday p.m., and 26 percent pass-by factor on Saturday, the site is estimated to generate approximately 6,570 net new trips on an average weekday, of which approximately 140 net new trips are estimated to occur during the weekday a.m. peak hour, with 600 net new trips occurring during the weekday p.m. peak hour, and 940 net new trips occurring during the Saturday mid-day peak hour.

It should be emphasized that although the overall size of the retail center, by City definition, is greater than 200,000 square feet, only 179,902 square feet was used as the basis for the site trip generation. This is because the relative difference in square footage applies to the “open air” garden area located outside the main confines of the building structure. The ITE trip generation rates for a *Shopping Center* land use do not apply to areas outside the primary walls of the structure.

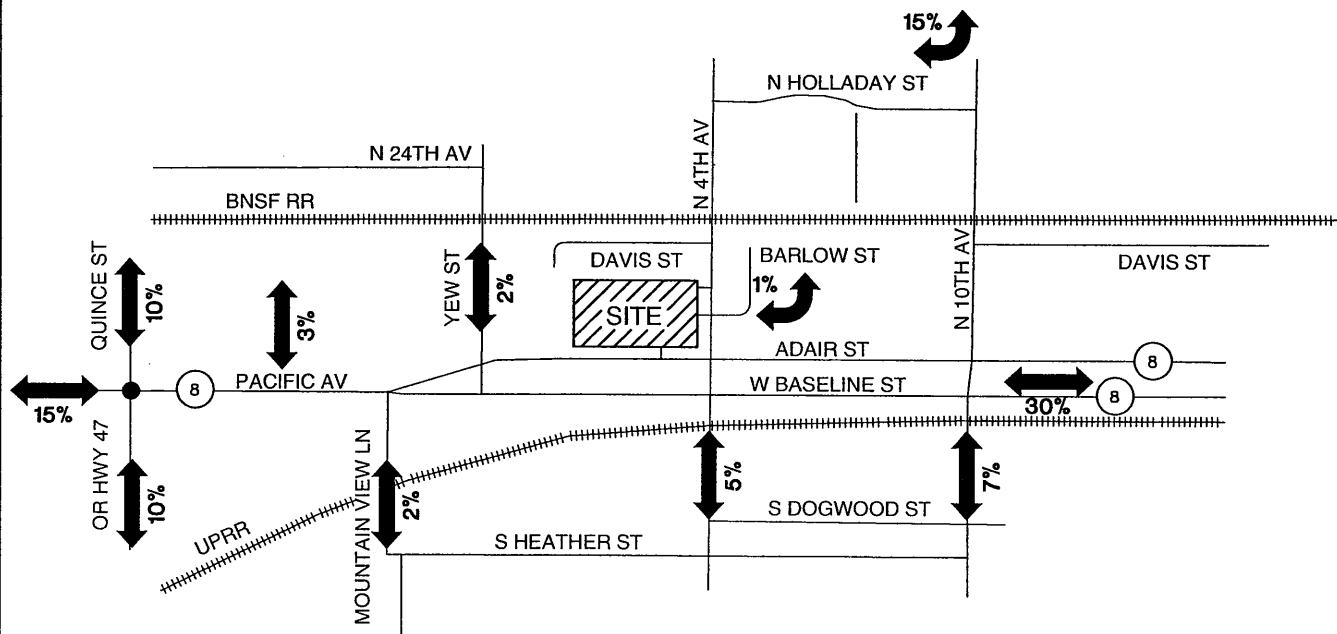
TRIP DISTRIBUTION

The distribution of site-generated trips onto the study area roadway system was estimated based on a review of existing turning movement patterns observed from the traffic counts conducted in the vicinity of the site, a review of the local transportation street network, the location of other similar retail establishments, and a review of a select zone assignment provided by Washington County using the regional travel demand forecasting model. The estimated trip distribution for all study periods is illustrated in Figure 11.

As shown in Figure 11, the majority of the site-generated traffic is estimated to travel to and from North Adair Street and West Baseline Street (35% west, 30% east). The bulk of the remaining site trips are estimated to travel north and south along Mountain View Drive, 4th Avenue, and 10th Avenue. Based on the estimated trip distribution pattern shown in Figure 11 and the trip generation shown in Table 3, Figures 12, 13, and 14 show the assignment of the site-generated traffic during the weekday a.m., weekday p.m., and Saturday mid-day peak hours, respectively.

2006 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study area’s transportation system will operate with the inclusion of traffic from the proposed development. The 2006 background traffic volumes for the weekday a.m., weekday p.m., and Saturday mid-day peak hours shown in Figures 7, 8, and 9 were added to the site-generated traffic shown in Figures 12, 13, and 14, to arrive at the total traffic volumes shown in Figures 15, 16, and 17, respectively.



ESTIMATED TRIP DISTRIBUTION PATTERN (BUILD-OUT YEAR 2006)
CORNELIUS, OREGON

FIGURE
11

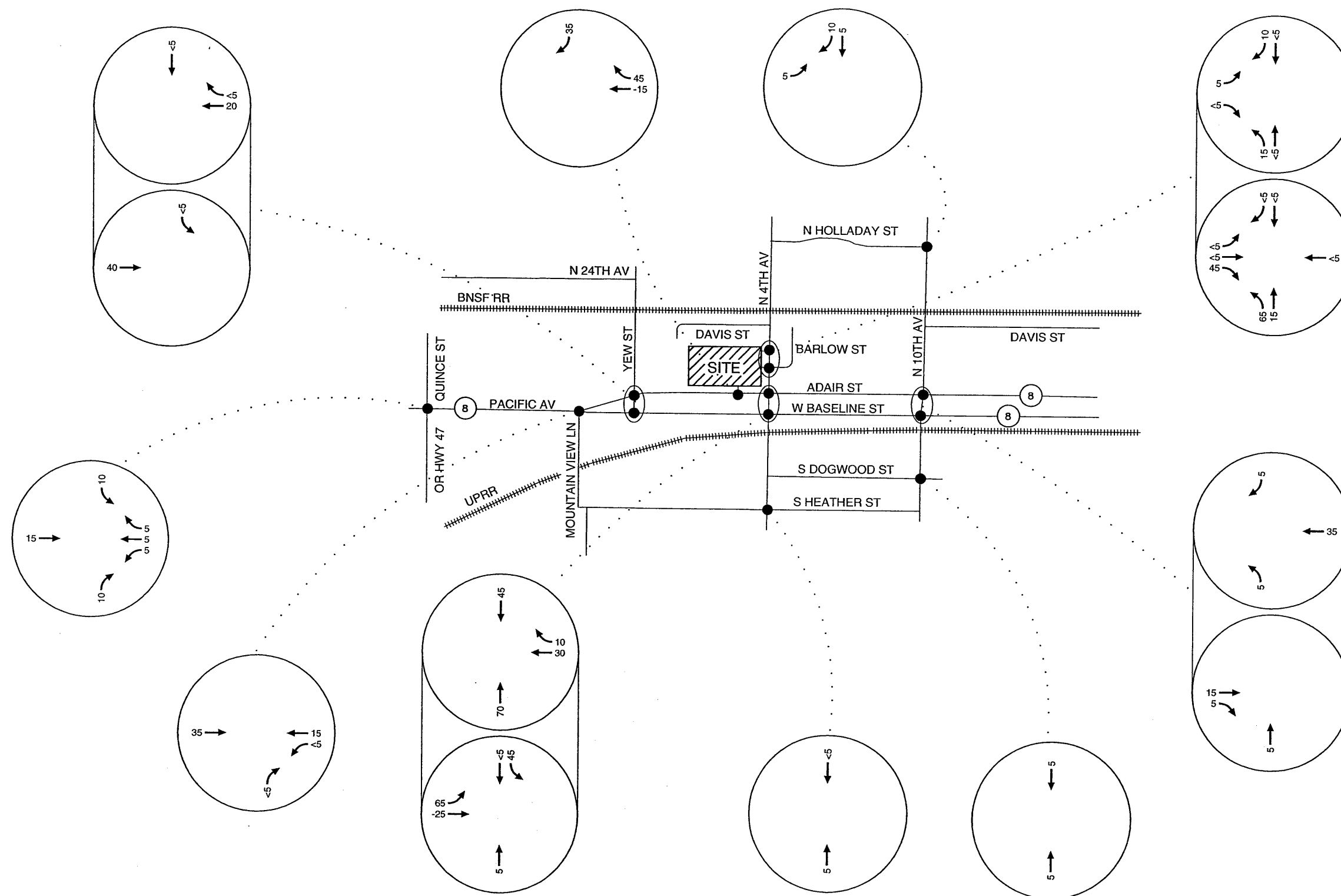
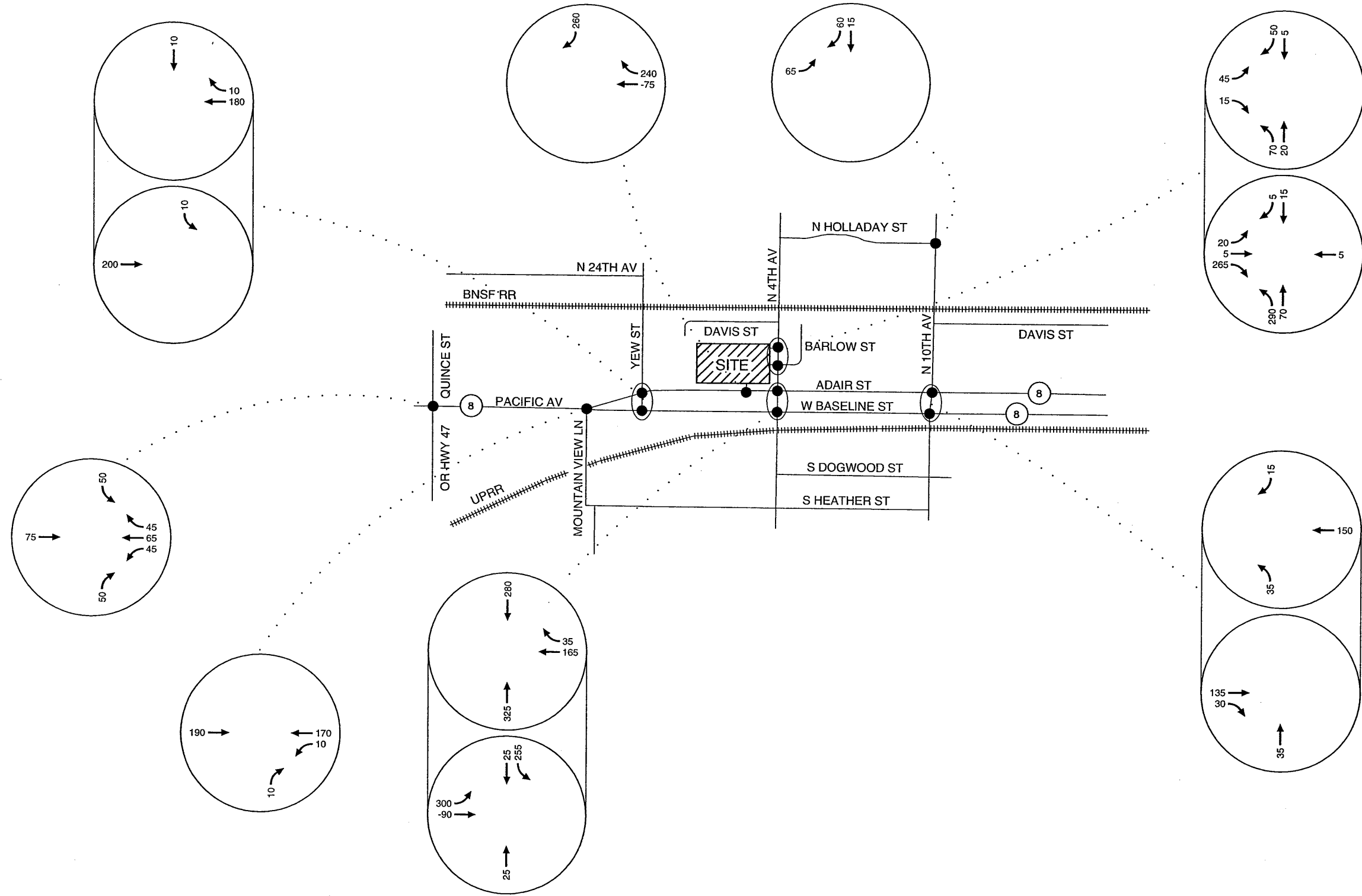


FIGURE 12





(NO SCALE)



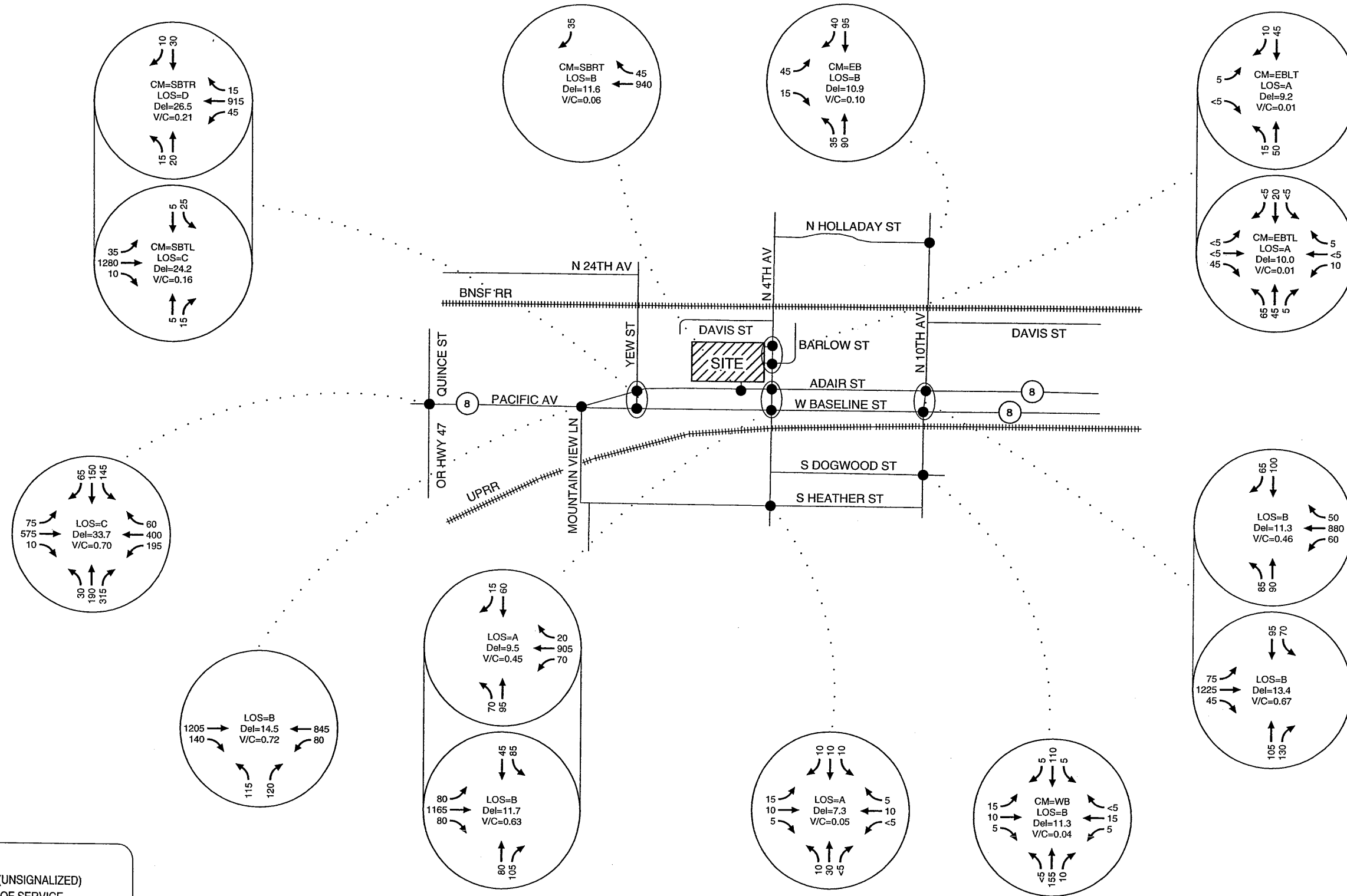
2006 SITE-GENERATED TRAFFIC VOLUMES
SATURDAY MIDDAY PEAK HOUR
CORNELIUS, OREGON

FIGURE

14



(NO SCALE)

**LEGEND**

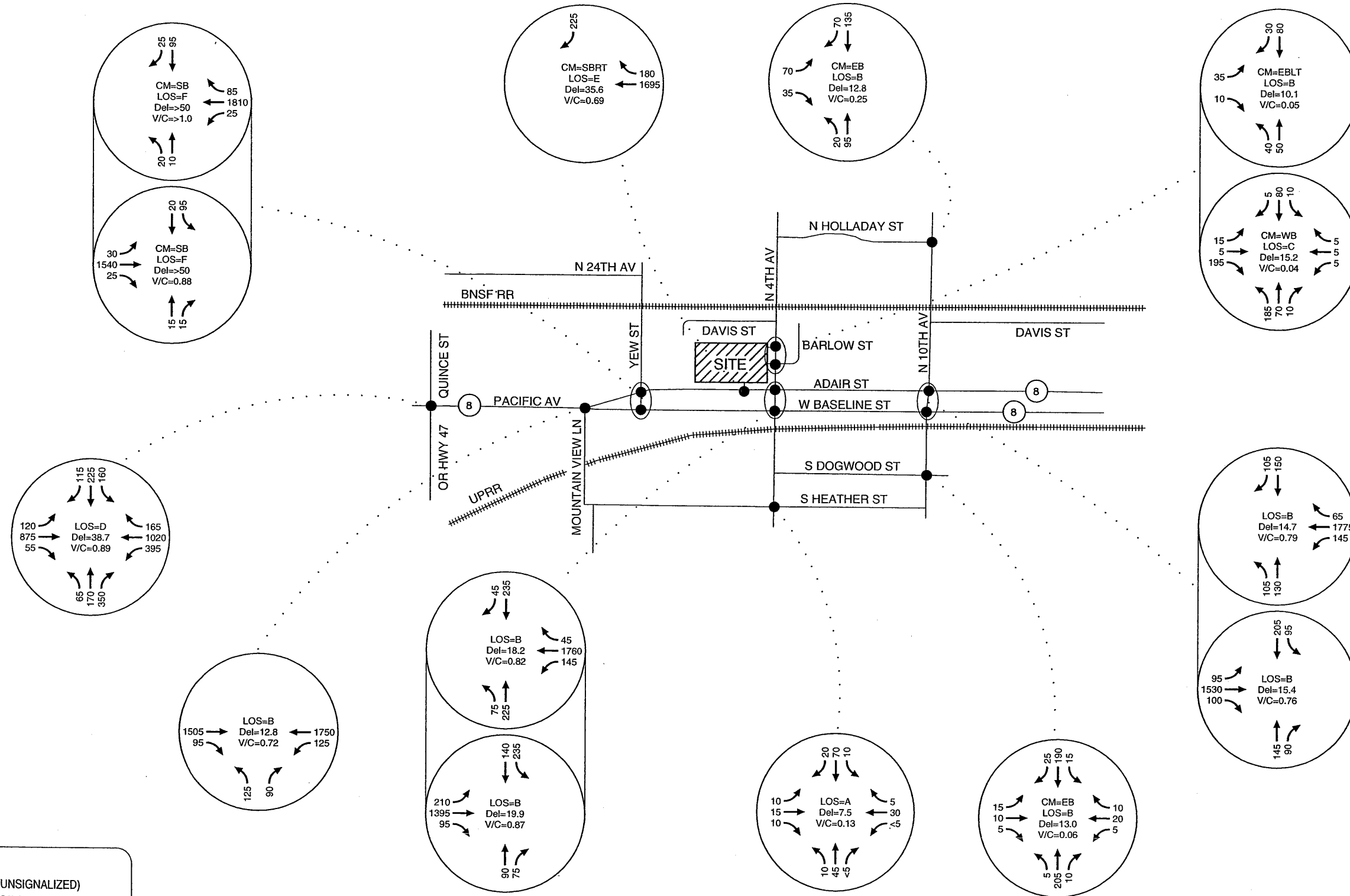
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**2006 TOTAL TRAFFIC CONDITIONS
 WEEKDAY AM PEAK HOUR
 CORNELIUS, OREGON**

FIGURE
15



(NO SCALE)

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
 OF SERVICE (UNSIGNALIZED)
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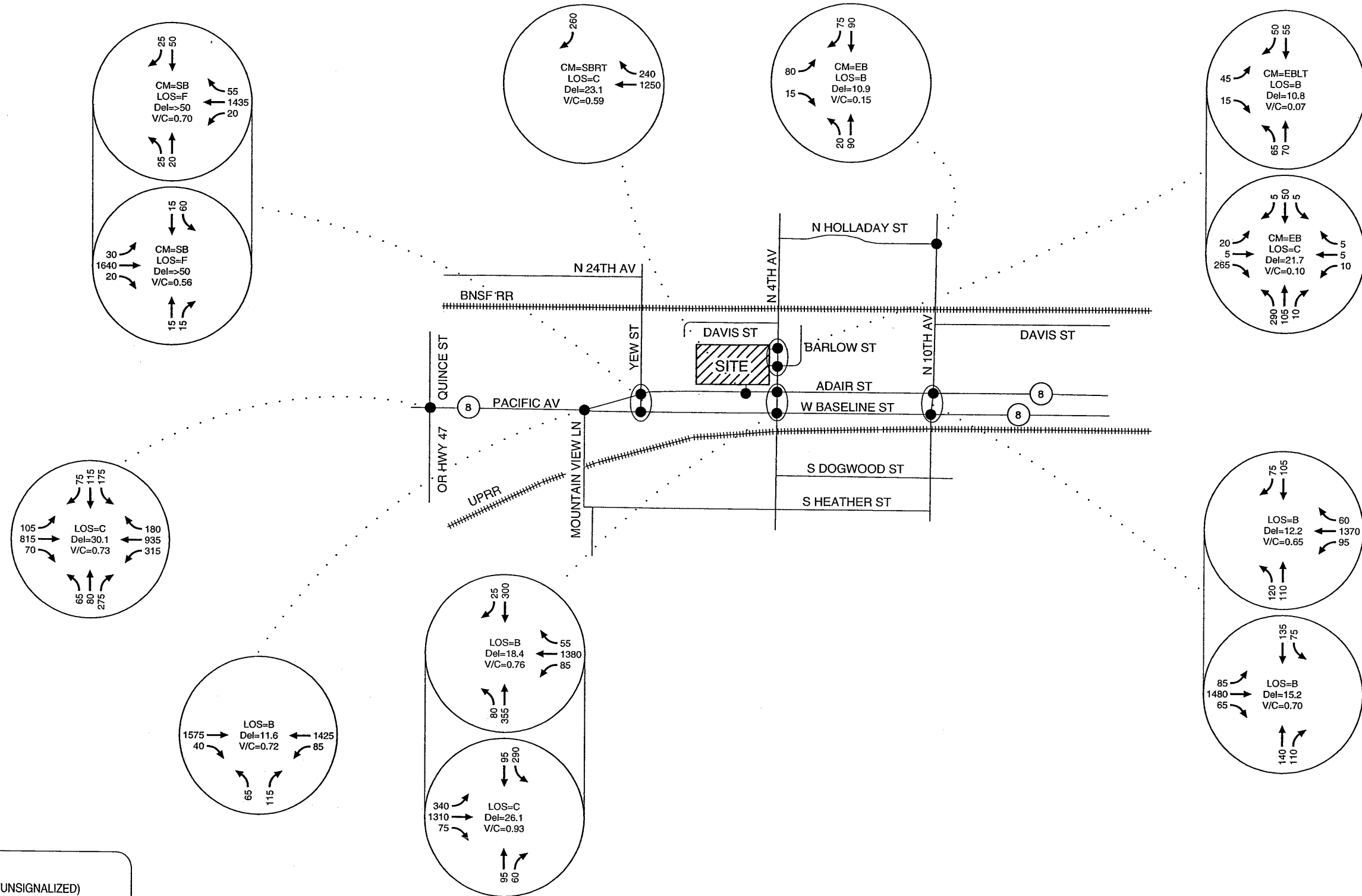
2006 TOTAL TRAFFIC CONDITIONS
 WEEKDAY PM PEAK HOUR
 CORNELIUS, OREGON

FIGURE

16



(NO SCALE)

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 (SIGNALIZED)/CRITICAL MOVEMENT LEVEL
 OF SERVICE (UNSIGNALIZED)
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2006 TOTAL TRAFFIC CONDITIONS
 SATURDAY MIDDAY PEAK HOUR
 CORNELIUS, OREGON

FIGURE
17

Intersection Levels of Service

Figures 15, 16 and 17 also provide a summary of year 2006 operating conditions at the study intersections assuming full build-out of the proposed development. As indicated in the respective figures, with proposed off-site transportation improvements in place, all of the study intersections are shown to operate at levels which meet the level-of-service standards of the City of Cornelius and the v/c ratio mobility standard of ODOT during the weekday a.m., weekday p.m., and Saturday mid-day peak hours, with the exception of the North Adair Street/North Yew Street intersection. This intersection is forecast to continue operating at LOS F and a v/c ratio over 1.0 during the weekday p.m. peak hour. Additionally, a signal warrant analysis indicates a traffic signal will not be warranted at this intersection under total build-out conditions. Based on these findings, it is recommended that a traffic signal not be installed until warrants are met. *Appendix "H" contains the 2006 total traffic level-of-service worksheets and signal warrant worksheet.*

Queuing Analysis

A vehicle queuing analysis was conducted under forecast year 2006 total traffic conditions to determine the vehicle storage requirements for key intersections in the study area. In the analysis, a Poisson distribution was applied at a 95th-percentile confidence interval to determine vehicle queue length probabilities. In other words, vehicles were assumed to arrive randomly and the queues reported will not be exceeded for more than five percent of the peak hour. The assumed length-of-red interval for signalized intersections was taken from the signal timing parameters used in the LOS calculations. For unsignalized intersections, the vehicle queuing analysis assumes random arrivals. Estimates of 95th-percentile vehicle queues are based on equation 17-37 from the *Highway Capacity Manual* (Reference 3) and one vehicle was assumed to occupy 25 feet for this analysis. Table 4 summarizes the results of the intersection queuing analysis. *Appendix "I" contains the queuing analysis worksheets.*

As shown in Table 4, the queuing analysis determined that with proposed off-site transportation improvements in place, sufficient lane storage will exist at the study intersections of North Adair Street/North 4th Avenue and West Baseline Street/North 4th Avenue, as well as the proposed site-access driveways to North Adair Street and North 4th Avenue.

Table 4
95th-Percentile Vehicle Queuing Summary
(Year 2006 Total Traffic Conditions)

Intersection	Movement & Approach	Weekday AM Peak Hour (ft)	Weekday PM Peak Hour (ft)	Saturday Mid-Day Peak (ft)	Available Storage (ft)	Adequate Storage Available?
North Adair Street (OR 8) at North 4 th Avenue	NB LT	75	75	100	250 ¹	Yes
	NB TH	100	175	225	250	Yes
	SB TH	75	175	200	Cont.	Yes
	SB RT	25	50	50	65 ²	Yes
West Baseline Street (OR 8) at North 4 th Avenue	NB TH	75	75	100	Cont.	Yes
	NB RT	100	75	75	150	Yes
	SB LT	100	175	200	250 ¹	Yes
	SB TH	50	125	75	250	Yes
North Adair Street (OR 8) at Right-in/Right-out Driveway	SB RT	25	125	100	Cont.	Yes
North 4 th Avenue at North Barlow Street/Site Driveway	NB LT	25	25	25	Cont.	Yes
	EB LT	25	25	25	50	Yes
	EB RT	25	25	50	50	Yes
North 4 th Avenue at Northern Site Driveway	NB LT	25	25	25	Cont.	Yes
	EB LT	25	25	25	50	Yes
	EB RT	25	25	25	50	Yes

Cont. = Continuous travel lane.

¹ Available striped storage length based on proposed side-by-side left-turn lanes on North 4th Avenue between North Adair Street and West Baseline Street.

² Available storage with proposed southbound right-turn lane

Analysis of Alternative Access Scenario

This section of the report contains an analysis of an additional site access scenario for which no access would be provided to the site along North Adair Street. The analysis was performed only for the weekday p.m. peak hour, which is the critical time period for when total traffic volumes reach their highest levels. Again, this scenario restricts all access to North Adair Street, with all site access taken from the two proposed driveways on North 4th Avenue. This alternative scenario was analyzed to fulfill a request made by ODOT officials and to provide a comparison between the operational impacts of having one right-in/right-out site-access driveway to North Adair Street versus having none at all.

The results of the operational analysis for this scenario are shown in Table 5. *Appendix "J" contains the operational analysis worksheets and queuing worksheets for this access scenario.* As shown in Table 5, the signalized intersection at North Adair Street and North 4th Avenue is forecast to operate at LOS C with a volume-to-capacity ratio of 0.93 during the weekday p.m. peak hour with no site access provided to North Adair Street. This is an increase of 0.11 in volume-to-capacity ratio and a degradation of level-of-service when compared to the proposed access scenario.

Table 5
Operations Analysis Comparison for Scenario with No Access to North Adair Street
(Year 2006 Total Weekday P.M. Peak Hour)

Scenario	North Adair Street/North 4 th Avenue		
	LOS	V/C	Delay
RIRO* Access to North Adair Street (Proposed)	B	0.82	18.2
No Access to North Adair Street (Alternative Scenario)	C	0.93	23.3

* RIRO – Right-In/Right-Out Driveway

The results of this comparison show that the proposed right-in/right-out driveway to North Adair Street provides better circulation of traffic and operations at the upstream North Adair Street/North 4th Avenue intersection. Additionally, the proposed right-in/right-out driveway is to act as one of the entry/exit points for truck deliveries. Without the driveway, it would be difficult for trucks destined for the northern truck bay and those trucks departing the southern truck bay to access North Adair Street. Furthermore, the resulting southbound right-turn queues would extend 200 feet, exceeding the available 50 feet of striped storage for the proposed southbound right-turn lane. These queues coupled with vehicles wishing to travel south through the intersection could potentially interfere with the southern site driveway and North Barlow Street intersection.

RIGHT TURN DECELERATION LANE WARRANT ANALYSIS

An analysis was conducted to determine the need for the proposed right-turn deceleration lane at the right-in/right-out driveway entrance along North Adair Street. This analysis was conducted in accordance with the guidelines for Right Turn Lane Criteria by ODOT. The analysis is based on comparing the right turn volume at a given location to the approach volume (adjacent through volumes plus right turn) to determine the degree to which the right turns may impede through vehicles. The analysis was conducted using the total traffic volume estimates for the weekday p.m. peak hour and the Saturday midday peak hour, which are the critical time periods when adjacent street traffic and site traffic peak. Table 6 summarizes the results of this analysis.

Table 6
Right-Turn Lane Warrant Analysis
(Year 2006 Total Traffic Conditions)

Intersection	Study Period	Movement	Through Volume ¹ (veh/hr)	Right Turn Volume (veh/hr)	Total Advancing Volume ¹ (veh/hr)	Right Turn Lane Warrant Met?
North Adair Street At Right-in/Right-out Driveway	PM Peak Hour	WB RT	850	185	1,035	Yes
North Adair Street At Right-in/Right-out Driveway	Saturday Mid-day Peak Hour	WB RT	625	240	865	Yes

Notes: WB = Westbound, RT = Right turn.

¹ Volume in outside travel lane.

As shown in Table 6, the right-turn lane warrant is met at the site-access driveways along North Adair Street, based on year 2006 total traffic conditions during the weekday p.m. and Saturday midday peak hours. *Appendix “K” contains the right turn deceleration lane warrant worksheets.*

Based on the findings above, it is recommended that right-turn deceleration lane be installed as proposed at the right-in/right-out site-access driveway along North Adair Street. Proper design treatment would consist of 20 feet of pavement width to accommodate a 5-foot bicycle lane and a 15-foot right-turn deceleration lane. This would be separate from the pavement width that currently defines the two 12-foot westbound through travel lanes on the highway. The lane could be developed starting at the existing bus pullout located on the north side of North Adair Street and extended to the driveway location. Additionally, a bulb-out should be provided on the west corner of the driveway to force right-turning traffic from the driveway to access the outside westbound through travel lane, while providing enough pavement width for a 5-foot bicycle lane.

LEFT TURN LANE WARRANT ANALYSIS

An analysis was conducted to determine whether the impacts from the proposed retail development will generate the need for an exclusive left-turn lane along the site frontage of North 4th Avenue. This analysis was conducted using several criterion: 1) ODOT Left Turn Lane Criteria, 2) build-out year 2006 intersection operations, and 3) build-out year 2006 vehicle queuing estimates.

The analysis of left-turn lane warrants using the ODOT Left Turn Lane Criteria was based on comparing the left turn volume at each of the proposed site-access driveways to the opposing plus advancing volumes to determine the degree to which the left turns may impede through vehicles. Although the warrant analysis results appear to indicate that a left-turn lane will be warranted only at the south driveway along North 4th Avenue (located across from Barlow Court), based on year 2006 total traffic conditions during the weekday p.m. and Saturday midday peak hours, the applicability of the ODOT criteria is suspect. This is because North 4th Avenue is a *Collector* street and not a state highway for which the ODOT criteria is based. Additionally, the posted speed on North 4th Avenue is low at 25 mph, and the nomographs shown in the ODOT left-turn lane criteria table only identify a volume-based threshold of less than or equal to 35 mph, with no indication of what the exact threshold would be for a roadway with a posted speed of 25 mph. *Appendix “K” also contains the left turn lane warrant worksheets.*

To further analyze the need for a left-turn lane on North 4th Avenue, a review was made of the traffic operations and vehicle queue projections for the northbound approaches at each of the site-access driveways, under build-out year 2006 total traffic conditions. The operations analysis results indicates a single northbound travel lane on North 4th Avenue (where left-turn movements are shared with through movements) will function very well with a LOS A during all analysis periods and average vehicle delays below 8.0 seconds. The queuing estimates also show no more than one vehicle present in a queue, indicating that drivers proceeding northbound will not be adversely affected by left-turning vehicles.

Based on the operational and queuing analysis results and the questionable results of the ODOT left-turn lane warrant analysis, a center left-turn lane is not recommended for North 4th Avenue along the site frontage.

ON-SITE CIRCULATION

As part of this study, internal circulation was evaluated to ensure that the site provides sufficient on-site circulation for pedestrian and traffic movements. Kittelson & Associates, Inc. worked with the project's development team to enhance the operational and safety aspects of the proposed external site-access driveways, pedestrian access throughout the site, and detailed review of on-site truck circulation through

simulations using the turn movement patterns of a WB-67 truck. Through this analysis, the proposed site plan has been refined to meet the needs of both pedestrian and vehicular traffic (passenger cars and trucks). *Appendix "L" contains turning movement diagrams illustrating the travel paths of large delivery trucks within the site.*

SIGHT DISTANCE

Intersection sight distance was observed in the field at all study intersections. None of the study intersections observed in the field exhibited any sight distance deficiencies. Landscaping along the site frontage should be maintained to provide adequate site distance at the site driveways.

DIVISION 51 DEVIATION PROCESS

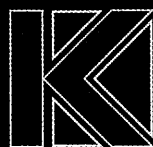
Throughout the proposed project limits, North Adair Street (OR 8) is classified as a *Statewide Highway* with a designation of "Urban Other," and has a posted speed of 40 mph. As such, the access spacing standard for this facility is 990 feet between driveways on the same side of the street. The minor deviation standard is 530 feet for driveways on the same side of the street.

A right-in/right-out site-access driveway is proposed on North Adair Street (OR 8). The driveway will be located approximately 410 feet west of North 4th Avenue. Based on the proposed access spacing for the right-in/right-out driveway, a major deviation process through ODOT will be necessary to secure a permit for this access. A separate memorandum will be prepared independent of this report as part of the approach permit application.

RAILROAD CROSSING ON NORTH 4TH AVENUE

The City of Cornelius requested that the transportation impact study fully evaluate conditions at the Burlington Northern Santa Fe railroad crossing along North 4th Avenue, just north of the site. Research shows that this at-grade crossing exhibits no safety deficiencies. The crossing itself, across the railroad right-of-way is narrow, but wide enough for two-way vehicular travel, and sufficiently wide enough to accommodate the large trucks that will deliver to the proposed retail development. There is adequate signage and striping on the approaches to the crossing, in the form of advanced warning signs, stop signs, and pavement stencils. The pavement conditions at the crossing are also adequate, and there is adequate sight distance from the driver's perspective on both stop-controlled approaches. Additionally, the frequency of trains on this rail line is low, with up to six trains per week, or an average of one train every 24-hours. Additional research shows there have been no accidents at this crossing over the last five years. The same is true for the BNSF rail crossing to the east at North 10th Avenue, which has the same traffic controls and much higher traffic demand. Based on the analysis of existing conditions, and a comparison to the conditions at the other rail crossing at North 10th Avenue, there is no indication that increased traffic demand generated by the proposed development will result in a significant impact to vehicular safety at the North 4th Avenue rail crossing.

In terms of pedestrian safety, pedestrians must walk across the railroad tracks using the street pavement. Considering that vehicles must stop at this location, there is no reason to believe pedestrian safety is at risk because of the interaction with cars. Additionally, observations made in the field indicate pedestrian activity in the industrial area north of the railroad track is low. During a recent visit made during the weekday p.m. peak hour, no pedestrians were observed to cross the rail line.



Section 5

Conclusions and Recommendations

Conclusions and Recommendations

Based on the results of the traffic impact analysis, the proposed retail development can be developed while maintaining acceptable levels of service and safety on the surrounding transportation system. The analysis developed the following findings and recommendations:

FINDINGS

Existing Conditions

- During the weekday a.m., weekday p.m., and Saturday mid-day peak hours, all study area intersections currently operate within performance standards deemed acceptable by the City of Cornelius and ODOT, with the exception of the North Adair Street/North Yew Street intersection. The minor street approach in the southbound direction is currently operating at or near capacity during the weekday p.m. peak hour. This intersection operates acceptably during the other study time periods, and does not meet signal warrants.

Year 2006 Background Conditions

- Year 2006 background traffic conditions (without the proposed retail development) were estimated assuming one year of continued local and regional growth. Additionally, the traffic associated with five approved, or in-process developments identified in the site vicinity by City staff was accounted for in the analysis of year 2006 background conditions.
- Operational analysis of year 2006 background traffic conditions indicates that all of the study intersections are forecast to operate within acceptable standards during the weekday a.m., p.m., and Saturday midday peak hours, with the exception of the North Adair Street/North Yew Street intersection. The southbound approach to this intersection is forecast to continue operating at or near capacity during the weekday p.m. peak hour, and not meet traffic signal warrants.

Proposed Development Activities

- The site is expected to generate approximately 6,570 net new daily trips, with approximately 140 net new trips occurring during the weekday a.m. peak hour, 600 net new trips occurring during the weekday p.m. peak hour, and 940 net new trips occurring during the Saturday mid-day peak hour.
- Access to the site is proposed via three external driveways: one right-in/right out unsignalized driveway onto North Adair Street (OR 8) and two unsignalized driveways to North 4th Avenue.

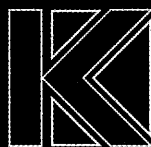
Year 2006 Total Traffic Conditions:

- Under forecast year 2006 total traffic conditions (with the proposed retail development), all of the study intersections are forecast to function within acceptable operating standards during the weekday a.m., p.m., and Saturday mid-day peak hours, with the exception of the North Adair Street/North Yew Street intersection. The southbound approach to this intersection is forecast to operate over capacity during the weekday p.m. peak hour and the intersection is not forecast to meet traffic signal warrants.

- A queuing analysis determined that with proposed off-site transportation improvements in place, sufficient lane storage will exist at the study intersections in the immediate site vicinity on North 4th Avenue, North Adair Street, and West Baseline Street.
- Right-turn deceleration lane warrants will be satisfied at the proposed right-in/right-out driveway on North Adair Street (OR 8) under the weekday p.m. and Saturday mid-day peak hours.
- Although ODOT left-turn lane warrant criteria will be satisfied along North 4th Avenue at the southern site-access driveway, the traffic operations and vehicle queuing analysis results indicate there is no need for a left-turn lane.
- Without the proposed right-in/right-out site-access driveway to North Adair Street, the level-of-service and volume-to-capacity ratio will degrade at the upstream intersection at North Adair Street and North 4th Avenue, relative to conditions where the proposed site-access driveway is in place along North Adair Street.
- Based on the proposed access spacing for the right-in/right-out driveway to North Adair Street (OR 8), a major deviation process through ODOT will be necessary to secure an access permit.

RECOMMENDATIONS

- Widen North 4th Avenue to a four-lane cross-section between the North Adair Street and West Baseline Street (OR 8) couplet to accommodate side-by-side left turn lanes northbound and southbound.
- Construct a right-turn deceleration lane on North Adair Street (OR 8) at the proposed right-in/right-out site driveway. Proper design treatment would consist of 20 feet of pavement width to accommodate a 5-foot bicycle lane and a 15-foot right-turn deceleration lane. This would be separate from the pavement width that currently defines the two 12-foot westbound through travel lanes on the highway. The lane could be developed starting at the existing bus pullout located on the north side of North Adair Street (OR 8) and extended to the driveway location. Additionally, a bulb-out should be provided on the west corner of the driveway to force right-turning traffic exiting from the driveway to access the outside westbound through travel lane, while providing enough pavement width for a 5-foot bicycle lane.
- Construct a separate southbound right-turn lane with approximately 50 feet of striped storage at the North 4th Avenue/North Adair Street (OR 8) intersection in conjunction with site build-out.
- Landscaping along the site frontage of North Adair Street (OR 8) and North 4th Avenue should be maintained to ensure adequate sight distance at all site-access driveways.



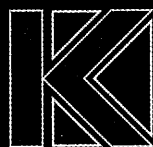
Section 6

References

References

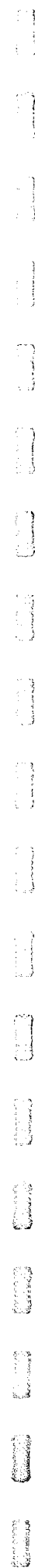
1. Kittelson & Associates, Inc. *Transportation Impact Analysis for Proposed Zone Change (North Adair Street/North 4th Avenue)*. August 2005.
2. Tri-Met. <http://www.trimet.org>. May 2, 2005.
3. Transportation Research Board. *Highway Capacity Manual*. 2000.
4. The Oregon Department of Transportation. *1999 Oregon Highway Plan*. 1999.
5. Institute of Transportation Engineers. *ITE Trip Generation Manual, Seventh Edition*. 2003.
6. Institute of Transportation Engineers. *Trip Generation Handbook*. 2004.





Appendix A

Scoping Letters



**KITTELSON & ASSOCIATES, INC.****TRANSPORTATION PLANNING/TRAFFIC ENGINEERING**

610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

MEMORANDUM

Date: July 20, 2005**Project #:** 7059**To:** Marty Jensvold, ODOT**From:** Brian Dunn, P.E., Senior Engineer**Project:** Retail Project At North 4th Avenue/North Adair Street (OR Hwy 8)**Subject:** Scoping Letter for Transportation Impact Study

This memorandum outlines our proposed scope of work for the proposed retail project located along North Adair Street (OR Hwy 8), just west of North 4th Avenue in Cornelius. This proposed scope was prepared based on our review of on-going in-process developments and transportation improvement projects in the area, and a review of the City of Cornelius, Washington County, and ODOT traffic impact analysis requirements.

Project Description

The proposed retail development site is bounded by North Adair Street (OR Hwy 8) to the south, North 4th Avenue to the east, residential development to the north, and both commercial and vacant land to the west. A series of private access drives will be established to distribute site traffic to/from the surrounding public streets of North Adair Street and North 4th Avenue. The size of the proposed retail use is approximately 179,900 square feet. Since the proposed development will require a zone change, a future conditions (year 2020) analysis will be required to comply with the Transportation Planning Rule.

Trip Generation

The estimated trip generation was calculated based on empirical observations contained in the standard reference manual *Trip Generation, 7th Edition* (Institute of Transportation Engineers, 2003) with supporting information contained in the *Trip Generation Handbook* (Institute of Transportation Engineers, 2004). A summary of the trip generation is shown in Table 1.

Table 1
Estimated Trip Generation

Land Use	ITE Code*	Size	Daily Trips	Weekday PM Peak Hour			Saturday Midday Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	820	179,902 sq. ft.	9,950	920	440	480	1,270	660	610
(Pass-By)**			3,380	320	160	160	330	165	165
Total Net New Trips			6,570	600	280	320	940	495	445

Notes:

* Trip generation estimates are based on Institute of Transportation Engineers (ITE), *Trip Generation*, 7th Edition, 2003 for Shopping Center land use.

** Pass-by trip reductions for the retail center were determined from Table 5.6 and Figures 5.5 and 5.7 of ITE Trip Generation Handbook, 2004. A 34% pass-by rate was applied to daily trips and weekday p.m. peak hour trips. A 26% pass-by rate was applied to Saturday midday peak hour trips.

As shown in Table 1, the site is estimated to generate 6,570 net new daily trips, with 600 net new trips (280 in, 320 out) occurring in the weekday p.m. peak hour and 940 net new trips (495 in, 445 out) occurring in the Saturday midday peak hour.

Trip Distribution and Assignment

The estimated trip distribution pattern for site build out will be based on observed traffic patterns, select zone traffic assignments using the travel demand forecasting model developed by Washington County, and from traffic counts conducted in the site vicinity. An estimated trip distribution pattern for the horizon year 2020 analyses will also consider planned improvements identified in Washington County's Transportation System Plan.

Analysis Periods

Based on a review of the City and ODOT's traffic impact study guidelines and our understanding of the Transportation Planning Rule, several scenarios will be analyzed to assess the traffic impacts related to the proposed retail development. These scenarios include the following:

- Base year 2005 conditions;
- Year 2006 background conditions;
- Year 2006 build-out conditions (proposed retail development);
- Year 2020 conditions (worst-case development under current zoning); and
- Year 2020 build-out conditions (worst-case development under proposed zoning).

Due to the retail nature of the site, traffic conditions for the weekday p.m. and Saturday midday peak hours will be analyzed. Due to the significant effects of planned roadway construction projects on travel patterns in the site vicinity, future year 2020 travel forecasts at the study intersections will be determined primarily through the use of the Washington County traffic model, with consideration given to historical growth along the OR Hwy 8 couplet and other in-process developments.

Study Intersections

The following intersections will be included in the analysis based on our understanding of the estimated site trip generation and distribution patterns and our review of the City and ODOT's traffic impact study guidelines:

- Pacific Avenue (OR Hwy 8)/Mountain View Lane;
- North Adair Street (OR Hwy 8)/North 4th Avenue;
- Baseline Street (OR Hwy 8)/South 4th Avenue;
- North Holladay Street/North 10th Avenue;
- North Adair Street (OR Hwy 8)/North 10th Avenue; and,
- Baseline Street (OR Hwy 8)/South 10th Avenue.
- North Adair Street (OR Hwy 8)/Site Driveway;
- North 4th Avenue/North Barlow Street/Southern Site Driveway; and
- North 4th Avenue/Northern Site Driveway.

Next Steps

At this time, we request that ODOT review this scoping letter and provide comments and for confirmation on the extents of the proposed scope. We would like to confirm the appropriate level of analysis so that we may proceed with the transportation impact study. Thank you for your assistance.

MEMORANDUM

Date: July 20, 2005

Project #: 7059

To: Dick Reynolds, City of Cornelius

From: Brian Dunn, P.E., Senior Engineer

Project: Retail Project At North 4th Avenue/North Adair Street (OR Hwy 8)

Subject: Scoping Letter for Transportation Impact Study

This memorandum outlines our proposed scope of work for the proposed retail project located along North Adair Street (OR Hwy 8), just west of North 4th Avenue in Cornelius. This proposed scope was prepared based on our review of on-going in-process developments and transportation improvement projects in the area, and a review of the City of Cornelius, Washington County, and ODOT traffic impact analysis requirements.

Project Description

The proposed retail development site is bounded by North Adair Street (OR Hwy 8) to the south, North 4th Avenue to the east, residential development to the north, and both commercial and vacant land to the west. A series of private access drives will be established to distribute site traffic to/from the surrounding public streets of North Adair Street and North 4th Avenue. The size of the proposed retail use is approximately 179,900 square feet. Since the proposed development will require a zone change, a future conditions (year 2020) analysis will be required to comply with the Transportation Planning Rule.

Trip Generation

The estimated trip generation was calculated based on empirical observations contained in the standard reference manual *Trip Generation, 7th Edition* (Institute of Transportation Engineers, 2003) with supporting information contained in the *Trip Generation Handbook* (Institute of Transportation Engineers, 2004). A summary of the trip generation is shown in Table 1.

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Land Use	ITE Code*	Size	Daily Trips	Weekday PM Peak Hour			Saturday Midday Peak Hour		
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(Pass-By)**			3,380	320	160	160	330	165	165
Total Net New Trips			6,570	600	280	320	940	495	445

Notes:

* Trip generation estimates are based on Institute of Transportation Engineers (ITE), *Trip Generation*, 7th Edition, 2003 for Shopping Center land use.

** Pass-by trip reductions for the retail center were determined from Table 5.6 and Figures 5.5 and 5.7 of ITE Trip Generation Handbook, 2004. A 34% pass-by rate was applied to daily trips and weekday p.m. peak hour trips. A 26% pass-by rate was applied to Saturday midday peak hour trips.

As shown in Table 1, the site is estimated to generate 6,570 net new daily trips, with 600 net new trips (280 in, 320 out) occurring in the weekday p.m. peak hour and 940 net new trips (495 in, 445 out) occurring in the Saturday midday peak hour.

Trip Distribution and Assignment

The estimated trip distribution pattern for site build out will be based on observed traffic patterns, select zone traffic assignments using the travel demand forecasting model developed by Washington County, and from traffic counts conducted in the site vicinity. An estimated trip distribution pattern for the horizon year 2020 analyses will also consider planned improvements identified in Washington County's Transportation System Plan.

Analysis Periods

Based on a review of the City and ODOT's traffic impact study guidelines and our understanding of the Transportation Planning Rule, several scenarios will be analyzed to assess the traffic impacts related to the proposed retail development. These scenarios include the following:

- Base year 2005 conditions;
- Year 2006 background conditions;
- Year 2006 build-out conditions (proposed retail development);
- Year 2020 conditions (worst-case development under current zoning); and
- Year 2020 build-out conditions (worst-case development under proposed zoning).

Due to the retail nature of the site, traffic conditions for the weekday p.m. and Saturday midday peak hours will be analyzed. Due to the significant effects of planned roadway construction projects on travel patterns in the site vicinity, future year 2020 travel forecasts at the study intersections will be determined primarily through the use of the Washington County traffic model, with consideration given to historical growth along the OR Hwy 8 couplet and other in-process developments.

Study Intersections

The following intersections will be included in the analysis based on our understanding of the estimated site trip generation and distribution patterns and our review of the City and ODOT's traffic impact study guidelines:

- Pacific Avenue (OR Hwy 8)/Mountain View Lane;
- North Adair Street (OR Hwy 8)/North 4th Avenue;
- Baseline Street (OR Hwy 8)/South 4th Avenue;
- North Holladay Street/North 10th Avenue;
- North Adair Street (OR Hwy 8)/North 10th Avenue;
- Baseline Street (OR Hwy 8)/South 10th Avenue;
- North Adair Street (OR Hwy 8)/Site Driveway;
- North 4th Avenue/North Barlow Street/Southern Site Driveway; and
- North 4th Avenue/Northern Site Driveway.

Next Steps

At this time, we request that the City of Cornelius review this scoping letter and provide comments and for confirmation on the extents of the proposed scope. We would like to confirm the appropriate level of analysis so that we may proceed with the transportation impact study. Thank you for your assistance.



Oregon

Theodore R. Kulongoski, Governor

Oregon Department of Transportation

ODOT Region 1

123 NW Flanders St

Portland, OR 97209

Telephone (503)731-8200

FAX (503)731-8259

August 5, 2005

Brian Dunn, P.E., Senior Engineer
Kittelson & Associates
610 SW Alder, Suite 700
Portland, Oregon, 97205

Subject: Traffic Impact Study Scope for proposed zone change and retail development on OR8 (N. Adair St) just to the west of N. 4th Avenue in Cornelius, Oregon

Dr. Mr. Dunn

We have received your proposed scope of work to be included in the Transportation Impact Study (TIS) associated with the proposed zone change for the proposed retail development site as described in your Memorandum dated July 20, 2005. Please note the following comments when completing your Study.

As you stated in your memorandum the TIS shall address the requirements of the Transportation Planning Rule (OAR660-012-0060). If the zone change is approved, any land use that is allowed outright under the new zone can be developed on the property. Due to this fact, the analysis must assume that the property is developed with the maximum potential allowed use (the use that generates the most vehicular trips) under the new zone in order to determine adequacy of the transportation facilities.

The TIS shall consider the proposed zone change separately from the proposed land use proposal.

For the proposed zone change, ODOT has determined the reasonable worst case scenario to be a 'supermarket' (ITE Code 850). When deriving the trip generation, use the maximum reasonable square footage a supermarket could fit on the proposed zone change lots under the City of Cornelius zoning. If you know of another land use or combination of land uses that could generate higher trips than the maximum reasonable square footage of a supermarket, use this trip generation in zone change portion of the TIS.

ODOT Log No:

For the land use proposal ODOT has determined the reasonable worst case scenario to be a 'free standing discount store' ITE Code 815. Another land use may be considered if it is consistent with the site plan used for the Land Use Application

In addition to the intersections you listed in your memorandum please include analysis of the OR8/Quince St intersection in the TIS. The TIS shall include an analysis with and without the North Adair Street Site Driveway; and demonstrate whether the North Adair Street / 4th Avenue intersection and the two site driveways on 4th Avenue would operate safely and reasonably with and without a site driveway on North Adair Street.

The TIS shall include descriptions of the existing highway conditions in the vicinity of the proposal. This information shall include the number of lanes on the highway, lane designations, bike/pedestrian facilities, and transit facilities. The proposed development description with site plan shall be included in the TIS (Note: Vehicle turning templates could be provided in the site plan to demonstrate the site's ability for circulation).

Accident history for at least the 3 most recent years should also be included in the TIS with assessment of the accident history showing any trend of collisions. If any trend of collisions occurs, the TIS shall state whether any reasonable actions can mitigate these trends.

Traffic counts used in the TIS analysis shall not be more than a year old from the date the TIS is prepared. Counts should not be taken within a week of state or federal holidays. Counts on the weekday shall be conducted either on a Tuesday, Wednesday, or Thursday. The presence of schools in the area should be considered when determining the date of counts. It is preferable to count when schools are in session.

The TIS shall include capacity analysis, document findings, and include recommendations for mitigation of traffic impacts. An intersection sight distance (ISD) measurement for the proposed North Adair Street approach shall be included in the TIS to ensure that the driveway adheres to the 500 foot ISD standard.. Turn lane warrants (if applicable) and turn lane storage requirements shall also be included in the TIS.

A volume-to-capacity ratio (v/c) calculation for all highway and site driveway intersections listed in the TIS. The Oregon Highway Plan (OHP) mobility standards require the OR 8 intersections to have a v/c no greater than 0.99 except for the North Adair Street / 10th Avenue and the Baseline Street / 10th Avenue intersections.

The OHP mobility standards require the 10th intersections to have a v/c no greater than 1.10 for the first hour and 0.99 for the second hour. This means you need to do traffic counts greater than two hours for the North Adair Street / 10th Avenue and the Baseline Street / 10th Avenue intersections to determine whether the 2nd highest hour falls before or after the PM peak hour.

The *Application of Oregon Highway Plan Mobility Standards* requires the TIS to use ODOT's traffic signal timing for the analysis of our intersections. Traffic signals located in the couplet are coordinated and this coordination shall be considered in both the mobility and 95th-percentile queue analyses. Our office will supply you with the traffic signal timing and parameters.

ODOT Log No:

- 4th & Main is master controller
- Signal timing

A 95th percentile queue analysis shall be conducted for all controlled points that contrast the background queues versus the total traffic queues for all movements. In this analysis, the TIS shall provide the length of storage lanes and distance from other intersections. The queue analysis shall consider three different types of queues: overflow, spillback, and storage blocking queues.

The TIS shall include an Appendix that contains all traffic count data, worksheets, and calculations used in the analysis.

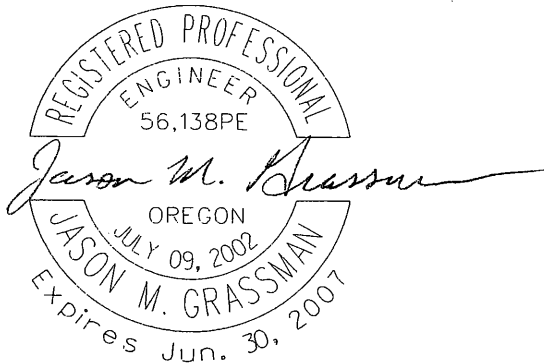
To provide better consistency in review comments, our office recommends the City's land use application and ODOT's approach permit application process both occur concurrently. To obtain an approach permit application, contact Steve Schalk, District 2A Access Coordinator, at (503) 229-5002.

If there are any questions regarding the information in this letter, please contact me at (503) 731-8221.

Sincerely,



Jason Grassman, P.E.
Traffic Development Review Team Leader



cc: Tim Wilson, Region 1 Senior Planner
Martin Jensvold, Region 1 Access Management Engineer
Steve Schalk, District 2A Access Coordinator
Dick Reynolds, City of Cornelius

ODOT Log No:



Oregon

Theodore R. Kulongoski, Governor

Oregon Department of Transportation

ODOT Region 1
123 NW Flanders St
Portland, OR 97209
Telephone (503)731-8200
FAX (503)731-8259

August 17, 2005

Brian Dunn, P.E., Senior Engineer
Kittelson & Associates
610 SW Alder, Suite 700
Portland, Oregon, 97205

Subject: Addendum to Traffic Impact Study Scope for proposed zone change and retail development on OR8 (N. Adair St) just to the west of N. 4th Avenue in Cornelius, Oregon

Dr. Mr. Dunn

Based on our meeting yesterday, August 11, 2005, I have listed several modifications to my Traffic Impact Study Scope memo (dated August 5, 2005).

You have proposed to use "Shopping Center" (ITE Code 820) as a worst-case scenario for both the zone change and the land use application. ODOT is requesting that you provide a memorandum justifying why this is a reasonable worst case scenario as it differs from the ODOT scope which requested "Supermarket" (ITE Code 850) be used for the zone change and "Free Standing Discount Store" (ITE Code 815) be used for the land use application.

In addition to the intersections listed previously in your scoping letter (date) and in ODOT's August 5th scope, we request that the study analyze the rail crossings on N. 4th. Currently, this at-grade crossing only has cross buck controls.

The study must provide WB-67 truck turning templates if the site circulation is designed such that trucks will use the highway approach.

The study shall include longer counts as per Table 5 of the *Oregon Highway Plan* for the OR 8 / 10th Avenue intersection if the v/c falls between 0.99 and 1.10. The traffic counts must be taken for the OR 8 / OR 47 intersection while school is in-session. Traffic counts must also be collected on the Yew Street approaches to OR 8 and factor in the highway counts from Mountain View and 4th Avenue.

The study shall apply the Application of *Oregon Highway Plan* Mobility Standards on both the coordinated and uncoordinated traffic signals on OR 8. Use ODOT's traffic

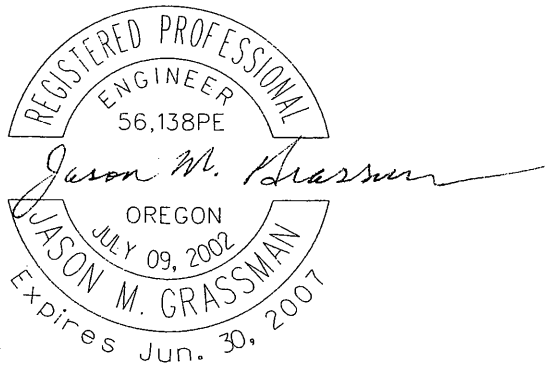
signal timing for the OR 8 couplet intersections at 4th Avenue and 10th Avenue. ODOT's master signal controller is located at 4th Avenue and Adair Street.

If there are any questions regarding the information in this letter, please contact me at (503) 731-8221.

Sincerely,



Jason Grassman, P.E.
Traffic Development Review Team Leader



cc: Tim Wilson, Region 1 Senior Planner
Sonya Kazen, Region 1 Associate Planner
Martin Jensvold, Region 1 Access Management Engineer
Steve Schalk, District 2A Access Coordinator
Dick Reynolds, City of Cornelius

**KITTELSON & ASSOCIATES, INC.****TRANSPORTATION PLANNING/TRAFFIC ENGINEERING**

610 SW ALDER, SUITE 700 • PORTLAND, OR 97205 • (503) 228-5230 • FAX (503) 273-8169

MEMORANDUM

Date: August 18, 2005**Project #:** 7059**To:** Dick Reynolds, City of Cornelius
Jason Grassman, ODOT Region 1**From:** Brian Dunn, P.E., Senior Engineer**Project:** Retail Project At North 4th Avenue/North Adair Street (OR Hwy 8)**Subject:** Confirmation of Revised Scoping Letter for Transportation Impact Study

This memorandum constitutes the revised scope of work proposed for the retail project located along North Adair Street (OR Hwy 8), just west of North 4th Avenue in Cornelius. This revised scope was prepared based on our first scoping letter dated July 20, 2005, our discussions with city staff at a pre-application meeting on July 22, 2005, from a letter received from ODOT Region 1 on August 5, 2005 and from a discussion with ODOT Region 1 staff on August 11, 2005. The purpose of this revised memorandum is to receive final confirmation from both the City of Cornelius and ODOT as to the proper scope for preparing the transportation impact study.

Project Description

The proposed retail development site is bounded by North Adair Street (OR Hwy 8) to the south, North 4th Avenue to the east, residential development to the north, and both commercial and vacant land to the west. A series of private access drives will be established to distribute site traffic to/from the surrounding public streets of North Adair Street and North 4th Avenue. The size of the proposed retail use is approximately 179,900 square feet.

Since the proposed development will require a zone change for a small plat from A-2 (Multi-Family) to C-2 (Commercial), a long-range analysis of transportation impacts will be required to demonstrate compliance with the Transportation Planning Rule.

Trip Generation

The estimated reasonable worst-case trip generation associated with the proposed zone change will be based on empirical observations contained in the standard reference manual *Trip Generation, 7th Edition* (Institute of Transportation Engineers, 2003) with supporting information contained in the *Trip Generation Handbook* (Institute of Transportation Engineers, 2004). For the current A-2 zone, the trip rates associated with an apartment building will be used. For the proposed C-2 zone, the trip rates associated with a fast-food restaurant will be used, which is more conservative than the "supermarket" land use proposed by ODOT.

The estimated trip generation for the proposed site development will also be based on the standard reference manual *Trip Generation, 7th Edition* with supporting information contained in the *Trip Generation Handbook*. A summary of the estimated site trip generation is shown in Table 1 for the proposed retail development.

Table 1
Estimated Site Trip Generation for Proposed Retail Development

Land Use	ITE Code*	Size	Daily Trips	Weekday PM Peak Hour			Saturday Midday Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	820	179,902 sq. ft.	9,950	920	440	480	1,270	660	610
(Pass-By)**			3,380	320	160	160	330	165	165
Total Net New Trips			6,570	600	280	320	940	495	445

Notes:

* Trip generation estimates are based on Institute of Transportation Engineers (ITE), *Trip Generation, 7th Edition, 2003* for Shopping Center land use.

** Pass-by trip reductions for the retail center were determined from Table 5.6 and Figures 5.5 and 5.7 of ITE *Trip Generation Handbook, 2004*. A 34% pass-by rate was applied to daily trips and weekday p.m. peak hour trips. A 26% pass-by rate was applied to Saturday midday peak hour trips.

As shown in Table 1, the proposed site development is estimated to generate 6,570 net new daily trips, with 600 net new trips (280 in, 320 out) occurring in the weekday p.m. peak hour and 940 net new trips (495 in, 445 out) occurring in the Saturday midday peak hour.

Trip Distribution and Assignment

The estimated trip distribution pattern for the estimated site build out year 2006 will be based on observed traffic count patterns, select zone traffic assignments using the travel demand forecasting model developed by Washington County, and an understanding of the locations of other similar retail uses. An estimated trip distribution pattern for the planning horizon year analyses for the proposed zone change will also consider the above criteria, but also consider the effects of funded or planned transportation improvements reasonably likely to occur as identified in the adopted transportation system plans of the cities of Cornelius and Forest Grove, as well as the adopted METRO Regional Transportation Plan.

Analysis Scenarios and Periods

Based on a review of the City and ODOT's traffic impact study guidelines and our understanding of the Transportation Planning Rule, several scenarios will be analyzed to assess the traffic impacts related to the proposed retail development. These scenarios include the following:

Proposed Zone Change Scenarios:

- Build-out year 2006 conditions (worst-case development under proposed zoning);
- Build-out year 2006 conditions (worst-case development under current zoning);
- Planning horizon year conditions (worst-case development under proposed zoning); and
- Planning horizon year conditions (worst-case development under current zoning).

Proposed Site Development Scenarios:

- Base year 2005 conditions;
- Year 2006 background conditions; and
- Year 2006 build-out conditions (proposed retail development).

Due to the retail nature of the site, traffic conditions for the weekday p.m. and Saturday midday peak hours will be analyzed. All traffic forecast volumes prepared for the short-term period will rely on historical growth patterns along the OR Hwy 8 couplet and will include traffic associated with approved in-process developments. Due to the significant effects of planned roadway construction projects on travel patterns in the site vicinity, traffic volumes for the planning horizon year at the study intersections will be determined using the traffic forecasts contained in the adopted 2005 City of Cornelius Transportation System Plan and the adopted 1999 City of Forest Grove Transportation System Plan.

Per the request of ODOT, a comparison will be made between traffic conditions with and without the proposed site-access driveway to North Adair Street.

Study Intersections

The following intersections will be included in the analysis based on our understanding of the estimated site trip generation and distribution patterns, our review of the City and ODOT's traffic impact study guidelines, and our verbal discussions with City and ODOT staff:

- Pacific Avenue (OR Hwy 8)/Mountain View Lane;
- North Adair Street (OR Hwy 8)/North 4th Avenue;
- Baseline Street (OR Hwy 8)/South 4th Avenue;
- North Holladay Street/North 10th Avenue;
- North Adair Street (OR Hwy 8)/North 10th Avenue; and,
- Baseline Street (OR Hwy 8)/South 10th Avenue.
- North Adair Street (OR Hwy 8)/Site Driveway;
- North 4th Avenue/North Barlow Street/Southern Site Driveway;
- North 4th Avenue/Northern Site Driveway;
- *South 4th Avenue/Heather Street; (Added per City request)*
- *South 10th Avenue/Dogwood Street; (Added per City request)*
- *North Adair Street (OR Hwy 8)/Yew Avenue; (Added per City request)*
- *Baseline Street (OR Hwy 8)/Yew Avenue; (Added per City request) and*
- *Pacific Avenue (OR Hwy 8)/Quince Street; (Added per ODOT request)*

Next Steps

At this time, we request that the City and ODOT review this revised scoping letter and provide confirmation on the extents of the proposed scope. If a response is not received within one week of this date August 17, 2005, we will assume that the revised scope for this project is agreeable to all parties. Thank you for your assistance.



CITY OF CORNELIUS

August 19, 2005

Daniel Boultinghouse
PacLand
6400 SE Lake road
Suite 300
Portland, OR 97222

RE: Proposed Wal-Mart Store at N. 4th & Adair Street – Highway Commercial, C-2

Dear Daniel,

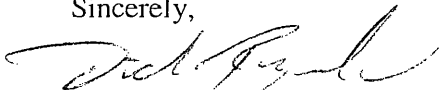
At the pre-application meeting that we held on July 26, 2005 with you and some of your project team for the proposed Wal-Mart Store you indicated that you would like staff to provide any further feedback we might come up with on the preliminary site plan. In an effort to work with you I'd like to provide some preliminary feedback on the design of this site and some general code compliance concerns. These issues are general in nature and you may already be aware of these and be working on them, but they could affect the overall site design.

1. Adair Street deceleration and turn lane that conflicts with the existing Tri-Met Bus Stop. I know that you are currently working with Tri-Met staff on this issue.
2. Use and Improvements to N. 4th Avenue:
 - a) *Section 11.20.56.B.2 of the City Development & Zoning Code states, the minimum public street width for commercial development shall be: Collector – Sixty (60) feet of right-of-way and thirty-six (36) feet of pavement curb to curb. Additional street width for turn lanes may be required if warranted by traffic volumes generated by the development.* This Development Standard is pretty straight forward and as we have discussed N. 4th Avenue does not have a 60 foot right-of-way. A 60 foot ROW is necessary in order to provide the minimum and safe required public improvements. I am unclear on how you intend to address this lack of right-of-way.
 - b) Turn Lanes. At this point we have not seen the results of your traffic study, but I can't imagine that a turn lane would not be needed on N. 4th Avenue. The traffic generation created by the new store coupled with the existing residential uses/accesses on the east side of N. 4th Avenue appear to create safety issues that would warrant a separate turn lane into your proposed store.

- c) Inadequate right-of-way and improvements to the railroad crossing on N. 4th Avenue. Aside from customer traffic using this route over the RR crossing to access the new store, I understand Wal-Mart delivery trucks will also use this route some of the time. Improvements to the crossing will need to be addressed (I think ODOT has the same concern).
3. Left turn lane from Baseline onto N. 4th Avenue. Again, I know that we do not have traffic data to this point, but there are even fewer supermarket/variety stores in Forest Grove, which has twice the population as Cornelius. Therefore, a significant number of Wal-Mart customers will come from the west, many if not most of which will use personal vehicles and the only transportation facility for these shoppers to use to access the proposed site is Baseline and N. 4th Avenue. Therefore, I would think a left turn lane from Baseline onto N. 4th Avenue would be necessary.
4. *Section 11.20.56.B.4 – Internal sidewalks or pathways shall be provided to ensure safe and convenient pedestrian circulation throughout the development.* There appears to be approximately 700 parking stalls on the east side of the proposed building and there is only one internal sidewalk to provide pedestrian access to the store. This single sidewalk is located on the north part of the parking lot. This may be convenient or safe for the abutting parking spaces, but not for the rest of the parking lot. I think you need to look at providing additional raised internal sidewalks to ensure safe, adequate internal pedestrian circulation.

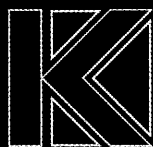
I am sure as we get into fine tuning the design of this site that there may be additional changes for us to work together on. We will look more closely at the plans once we have a complete application. Thanks for the opportunity to work with you on this proposal.

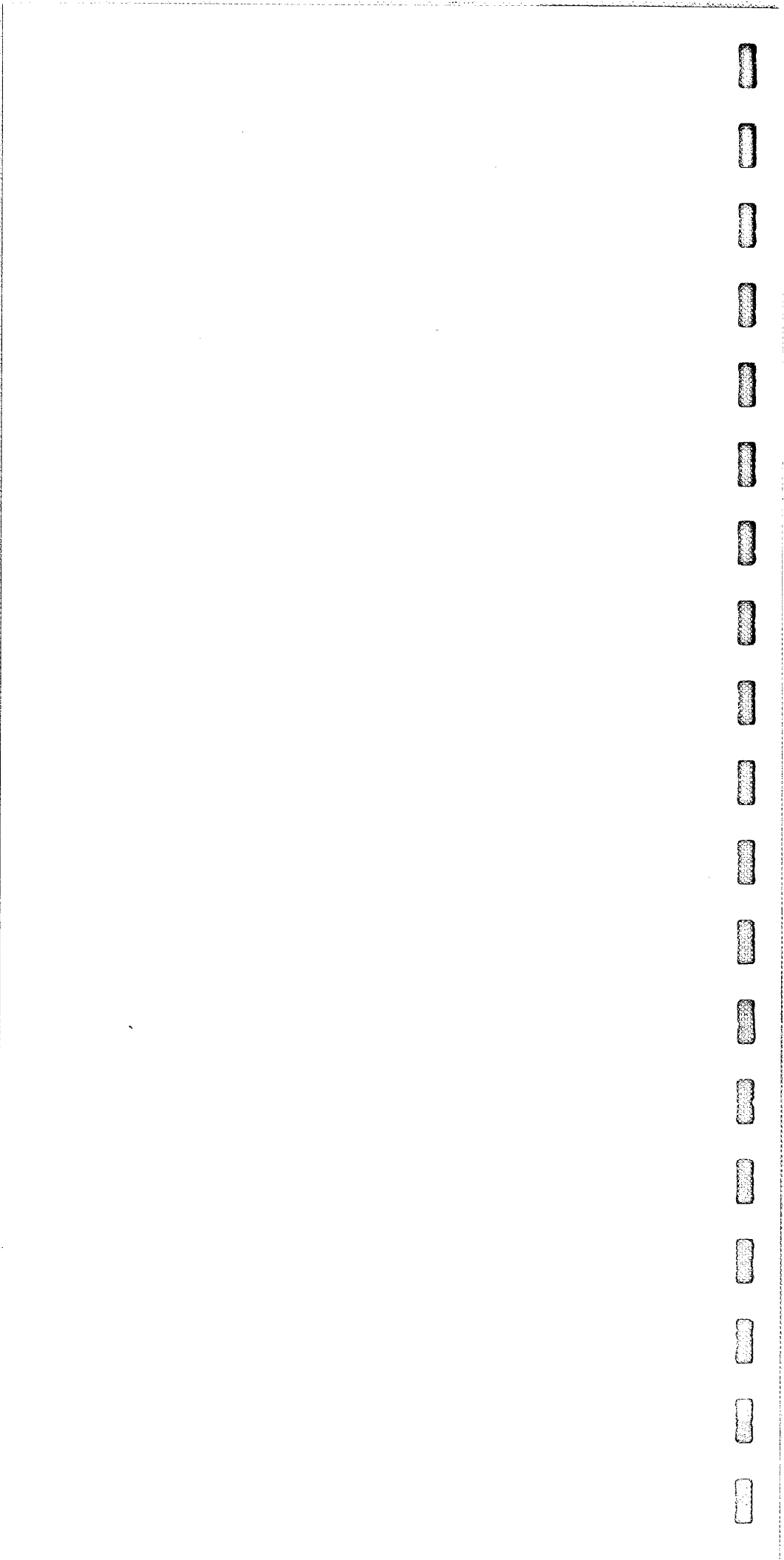
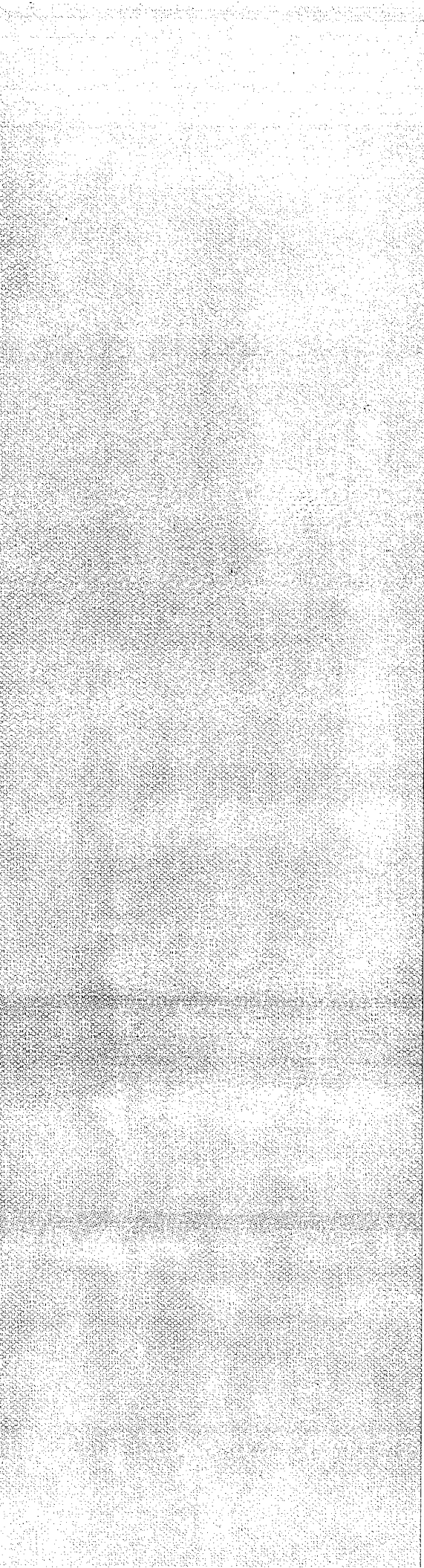
Sincerely,



Dick Reynolds
Planning Manager

Cc: Brian Dunn, Kittelson & Associates, 610 SW Alder, Suite 700, Portland 97205
File





Appendix B

Traffic Count Data

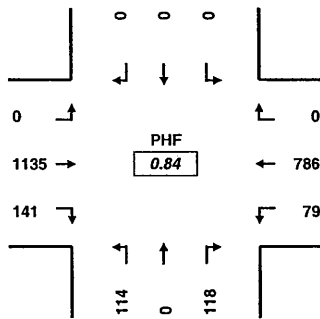


INTERSECTION: *Grass Area--From North/Pacific Ave--From East*
 PROJECT ID#: 7059
 QC JOB #: 10086001

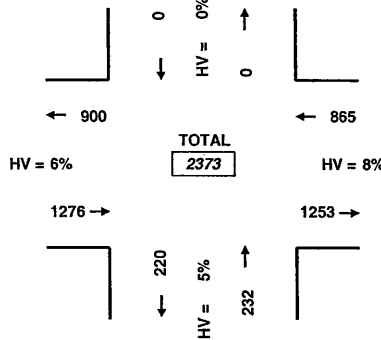
START TIME: 7:00 AM
 END TIME: 9:00 AM
 DATE: 3/31/2005

QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



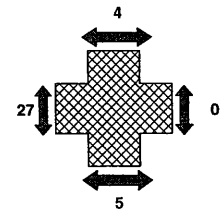
PEAK HOUR LINK VOLUMES



PEAK HOUR: 7:15 AM
 TO
 8:15 AM

PEAK 15 MINUTES: 7:45 AM
 TO
 8:00 AM

PEAK HOUR PED
 CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	Grass Area--From North (Southbound)			Pacific Ave--From East (Westbound)			Mt View Ln--From South (Northbound)			Pacific Ave--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	0	0	0	52	5	3	0	2	7	99	0	2	0	1	1	168	4
7:05 AM	0	0	0	0	59	6	1	0	4	2	80	0	0	0	0	0	152	0
7:10 AM	0	0	0	0	55	10	1	0	4	7	77	0	0	0	0	0	154	0
7:15 AM	0	0	0	0	71	7	4	0	7	9	109	0	0	0	0	0	207	0
7:20 AM	0	0	0	0	51	9	9	0	5	15	85	0	1	0	0	0	174	1
7:25 AM	0	0	0	0	53	5	9	0	10	9	96	0	0	0	0	0	182	0
7:30 AM	0	0	0	0	72	5	9	0	9	9	75	0	0	0	1	1	179	2
7:35 AM	0	0	0	0	63	3	4	0	11	14	112	0	0	0	0	9	207	9
7:40 AM	0	0	0	0	85	7	10	0	14	15	78	0	1	0	2	7	209	10
7:45 AM	0	0	0	0	88	10	12	0	9	30	118	0	1	0	1	2	267	4
7:50 AM	0	0	0	0	75	8	16	0	20	20	106	0	1	0	0	8	245	9
7:55 AM	0	0	0	0	52	7	20	0	15	11	90	0	0	0	0	0	195	0
8:00 AM	0	0	0	0	78	9	16	0	9	5	92	0	0	0	1	0	209	1
8:05 AM	0	0	0	0	49	7	7	0	2	3	91	0	0	0	0	0	159	0
8:10 AM	0	0	0	0	49	2	2	0	3	1	83	0	0	0	0	0	140	0
8:15 AM	0	0	0	0	72	6	4	0	3	4	96	0	0	0	0	0	185	0
8:20 AM	0	0	0	0	59	2	7	0	6	2	81	0	0	0	0	0	157	0
8:25 AM	0	0	0	0	50	5	5	0	8	7	87	0	0	0	0	0	162	0
8:30 AM	0	0	0	0	57	0	9	0	5	7	74	0	0	0	0	5	152	5
8:35 AM	0	0	0	0	59	4	4	0	7	3	60	0	2	0	1	3	137	6
8:40 AM	0	0	0	0	93	8	5	0	7	8	79	0	0	0	1	0	200	1
8:45 AM	0	0	0	0	75	4	2	0	8	11	73	0	0	0	0	0	173	0
8:50 AM	0	0	0	0	74	8	6	0	6	9	86	0	1	0	0	0	189	1
8:55 AM	0	0	0	0	69	10	3	0	4	8	84	0	0	0	0	0	178	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	0	0	0	776	82	98	0	110	148	1125	0	6	0	5	28	2339	39
7:15 AM	0	0	0	0	786	79	118	0	114	141	1135	0	4	0	5	27	2373	36
7:30 AM	0	0	0	0	792	71	112	0	109	121	1109	0	3	0	5	27	2314	35
7:45 AM	0	0	0	0	781	68	107	0	94	101	1057	0	4	0	4	18	2208	26
8:00 AM	0	0	0	0	784	65	70	0	68	68	986	0	3	0	3	8	2041	14

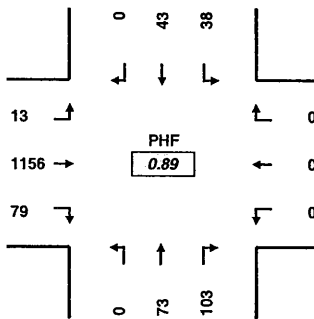
INTERSECTION: N 4th Ave-From North/N Baseline St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086002

START TIME: 7:00 AM
 END TIME: 9:00 AM
 DATE: 3/31/2005



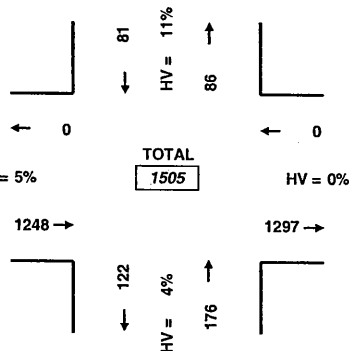
16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



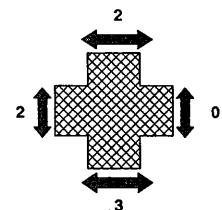
PEAK HOUR: 7:30 AM TO 8:30 AM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 7:45 AM TO 8:00 AM

PEAK HOUR PED CROSSING VOLUMES



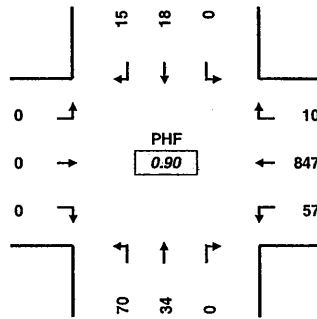
5-MINUTE COUNT PERIOD BEGINNING AT	N 4th Ave-From North (Southbound)			N Baseline St-From East (Westbound)			N 4th Ave-From South (Northbound)			N Baseline St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	0	4	0	0	0	10	7	0	1	94	4	0	0	2	0	120	2
7:05 AM	0	3	5	0	0	0	5	5	0	2	93	2	0	0	0	0	115	0
7:10 AM	0	1	3	0	0	0	5	7	0	2	76	2	0	0	0	0	96	0
7:15 AM	0	5	0	0	0	0	7	8	0	2	97	3	0	0	0	0	122	0
7:20 AM	0	0	0	0	0	0	8	6	0	2	97	5	0	0	0	0	118	0
7:25 AM	0	4	1	0	0	0	5	1	0	2	91	2	0	0	1	0	106	1
7:30 AM	0	0	4	0	0	0	13	6	0	4	81	2	0	0	1	0	110	1
7:35 AM	0	6	3	0	0	0	5	8	0	4	102	0	0	0	0	0	128	0
7:40 AM	0	6	5	0	0	0	6	10	0	1	122	0	0	0	0	2	150	2
7:45 AM	0	2	6	0	0	0	7	10	0	3	110	1	0	0	0	0	139	0
7:50 AM	0	5	4	0	0	0	3	2	0	8	113	2	0	0	0	0	137	0
7:55 AM	0	1	6	0	0	0	8	6	0	8	115	1	0	0	0	0	145	0
8:00 AM	0	6	4	0	0	0	6	5	0	5	81	2	0	0	1	0	109	1
8:05 AM	0	4	2	0	0	0	5	5	0	3	102	0	0	0	0	0	121	0
8:10 AM	0	6	2	0	0	0	11	3	0	13	71	1	0	0	0	0	107	0
8:15 AM	0	5	0	0	0	0	11	6	0	11	97	1	2	0	0	0	131	2
8:20 AM	0	1	2	0	0	0	15	6	0	8	67	1	0	0	1	0	100	1
8:25 AM	0	1	0	0	0	0	13	6	0	11	95	2	0	0	0	0	128	0
8:30 AM	0	1	3	0	0	0	13	7	0	6	72	1	0	0	0	1	103	1
8:35 AM	0	6	4	0	0	0	11	11	0	1	74	1	0	0	0	0	108	0
8:40 AM	0	6	3	0	0	0	6	10	0	4	70	2	0	0	0	0	101	0
8:45 AM	0	2	4	0	0	0	3	8	0	3	72	2	0	0	0	0	94	0
8:50 AM	0	3	0	0	0	0	13	5	0	4	83	3	0	0	0	0	111	0
8:55 AM	0	5	2	0	0	0	4	5	0	8	94	3	0	0	0	0	121	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	33	41	0	0	0	82	76	0	39	1191	24	0	0	4	2	1486	6
7:15 AM	0	45	37	0	0	0	84	70	0	55	1182	19	0	0	3	2	1492	5
7:30 AM	0	43	38	0	0	0	103	73	0	79	1156	13	2	0	3	2	1505	7
7:45 AM	0	44	36	0	0	0	109	77	0	81	1067	15	2	0	2	1	1429	5
8:00 AM	0	46	26	0	0	0	111	77	0	77	978	19	2	0	2	1	1334	5

INTERSECTION: N 4th Ave-From North/W Adair St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086003

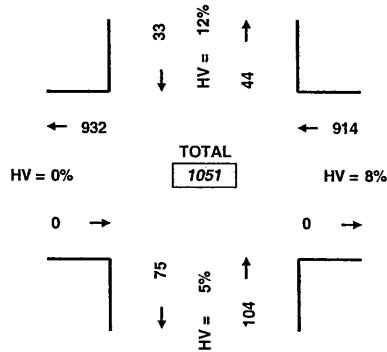
START TIME: 7:00 AM
 END TIME: 9:00 AM
 DATE: 3/31/2005

QC
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503-620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



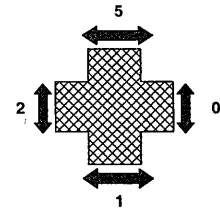
PEAK HOUR LINK VOLUMES



PEAK HOUR: 7:00 AM
 TO
 8:00 AM

PEAK 15 MINUTES: 7:45 AM
 TO
 8:00 AM

PEAK HOUR PED
 CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	N 4th Ave-From North (Southbound)			W Adair St-From East (Westbound)			N 4th Ave-From South (Northbound)			W Adair St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	1	3	0	0	57	1	0	8	5	0	0	0	0	0	0	0	75	0
7:05 AM	2	3	0	2	63	5	0	2	4	0	0	0	0	0	0	0	81	0
7:10 AM	0	0	0	0	61	4	0	3	5	0	0	0	0	0	0	0	73	0
7:15 AM	2	1	0	0	78	4	0	6	6	0	0	0	0	0	1	0	97	1
7:20 AM	1	0	0	0	66	0	0	4	5	0	0	0	0	0	0	0	76	0
7:25 AM	1	1	0	2	73	4	0	1	2	0	0	0	1	0	0	0	84	1
7:30 AM	1	2	0	1	59	3	0	4	5	0	0	0	1	0	0	0	75	1
7:35 AM	1	3	0	2	55	6	0	0	8	0	0	0	0	0	0	0	75	0
7:40 AM	1	1	0	1	97	10	0	2	10	0	0	0	2	0	0	2	122	4
7:45 AM	2	1	0	2	89	6	0	1	7	0	0	0	1	0	0	0	108	1
7:50 AM	2	1	0	0	81	9	0	2	7	0	0	0	0	0	0	0	102	0
7:55 AM	1	2	0	0	68	5	0	1	6	0	0	0	0	0	0	0	83	0
8:00 AM	2	1	0	1	63	9	0	3	3	0	0	0	2	0	0	0	82	2
8:05 AM	1	1	0	0	54	6	0	0	4	0	0	0	0	1	1	0	66	2
8:10 AM	0	0	0	1	48	7	0	2	4	0	0	0	0	0	0	0	62	0
8:15 AM	0	2	0	0	74	4	0	1	6	0	0	0	0	0	0	0	87	0
8:20 AM	2	1	0	0	62	1	0	2	4	0	0	0	0	0	0	0	72	0
8:25 AM	0	0	0	3	52	1	0	2	7	0	0	0	0	0	0	0	65	0
8:30 AM	2	2	0	1	58	2	0	0	8	0	0	0	0	0	0	0	73	0
8:35 AM	1	2	0	2	78	10	0	1	10	0	0	0	1	0	0	0	104	1
8:40 AM	2	4	0	1	64	4	0	3	8	0	0	0	0	0	0	0	86	0
8:45 AM	2	2	0	0	69	4	0	2	11	0	0	0	0	0	0	0	90	0
8:50 AM	6	0	0	3	81	5	0	1	6	0	0	0	1	0	0	0	102	1
8:55 AM	3	0	0	0	71	5	0	2	6	0	0	0	1	0	0	0	87	1
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	15	18	0	10	847	57	0	34	70	0	0	0	5	0	1	2	1051	8
7:15 AM	15	14	0	10	831	69	0	26	67	0	0	0	7	1	2	2	1032	12
7:30 AM	13	15	0	11	802	67	0	20	71	0	0	0	6	1	1	2	999	10
7:45 AM	15	17	0	11	791	64	0	18	74	0	0	0	4	1	1	0	990	6
8:00 AM	21	15	0	12	774	58	0	19	77	0	0	0	5	1	1	0	976	7

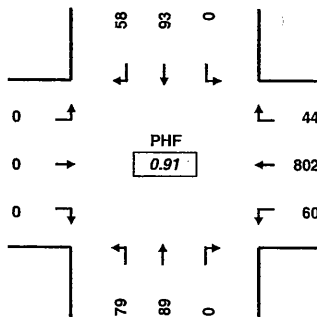
INTERSECTION: North 10th Ave--From North/N Adair St--From East
 PROJECT ID#: 7059
 QC JOB #: 10086004

START TIME: 7:00 AM
 END TIME: 9:00 AM
 DATE: 3/31/2005



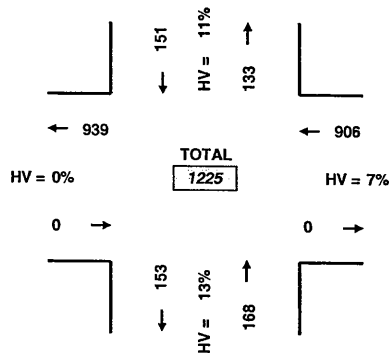
16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503-620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



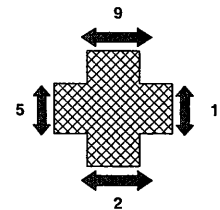
PEAK HOUR: 7:15 AM TO 8:15 AM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 7:45 AM TO 8:00 AM

PEAK HOUR PED CROSSING VOLUMES



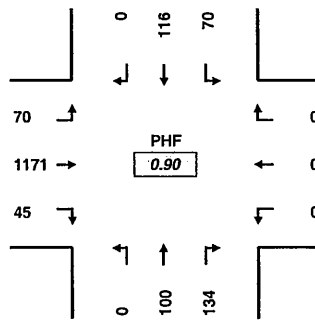
5-MINUTE COUNT PERIOD BEGINNING AT	North 10th Ave--From North (Southbound)			N Adair St--From East (Westbound)			North 10th Ave--From South (Northbound)			N Adair St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	10	7	0	2	43	5	0	10	3	0	0	0	0	0	1	3	80	4
7:05 AM	7	5	0	3	48	3	0	14	5	0	0	0	1	1	2	0	85	4
7:10 AM	7	4	0	4	56	2	0	8	3	0	0	0	0	1	0	2	84	3
7:15 AM	5	7	0	2	78	2	0	10	6	0	0	0	1	0	0	0	110	1
7:20 AM	3	5	0	2	64	3	0	6	5	0	0	0	0	0	0	0	88	0
7:25 AM	4	5	0	5	58	4	0	7	12	0	0	0	2	0	0	1	95	3
7:30 AM	4	12	0	1	50	1	0	6	8	0	0	0	0	0	1	1	82	2
7:35 AM	6	9	0	2	59	3	0	7	3	0	0	0	2	0	0	1	89	3
7:40 AM	4	7	0	6	96	4	0	5	9	0	0	0	1	0	0	0	131	1
7:45 AM	2	10	0	8	88	3	0	4	4	0	0	0	0	0	0	0	119	0
7:50 AM	10	11	0	4	67	4	0	7	8	0	0	0	3	0	0	1	111	4
7:55 AM	6	7	0	4	74	7	0	6	2	0	0	0	0	0	1	1	106	2
8:00 AM	6	5	0	4	55	13	0	5	6	0	0	0	0	0	0	0	94	0
8:05 AM	3	8	0	4	56	6	0	13	5	0	0	0	0	1	0	0	95	1
8:10 AM	5	7	0	2	57	10	0	13	11	0	0	0	0	0	0	0	105	0
8:15 AM	0	8	0	2	59	10	0	11	8	0	0	0	0	1	0	0	98	1
8:20 AM	2	6	0	7	69	14	0	7	6	0	0	0	0	0	4	3	111	7
8:25 AM	2	7	0	5	44	6	0	10	2	0	0	0	0	0	0	0	76	0
8:30 AM	9	10	0	1	60	6	0	5	5	0	0	0	0	0	0	0	96	0
8:35 AM	2	6	0	3	67	5	0	2	9	0	0	0	0	1	2	0	94	3
8:40 AM	1	8	0	3	63	4	0	6	7	0	0	0	0	0	0	0	92	0
8:45 AM	3	3	0	2	71	5	0	7	6	0	0	0	0	1	0	0	97	1
8:50 AM	7	8	0	3	73	6	0	1	3	0	0	0	0	1	2	0	101	3
8:55 AM	1	8	0	5	54	3	0	5	5	0	0	0	0	0	0	0	81	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	68	89	0	43	781	41	0	90	68	0	0	0	10	2	5	10	1180	27
7:15 AM	58	93	0	44	802	60	0	89	79	0	0	0	9	1	2	5	1225	17
7:30 AM	50	97	0	49	774	81	0	94	72	0	0	0	6	2	6	7	1217	21
7:45 AM	48	93	0	47	759	88	0	89	73	0	0	0	3	3	7	5	1197	18
8:00 AM	41	84	0	41	728	88	0	85	73	0	0	0	0	5	8	3	1140	16

INTERSECTION: N 10th Ave-From North/W Baseline St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086005

START TIME: 7:00 AM
 END TIME: 9:00 AM
 DATE: 3/31/2005

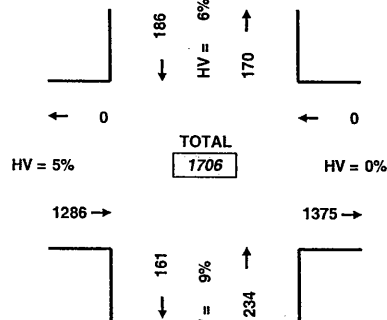
QC
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



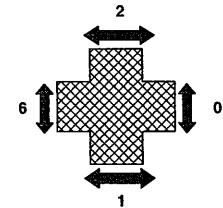
PEAK HOUR: 7:30 AM TO 8:30 AM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 7:45 AM TO 8:00 AM

PEAK HOUR PED CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave-From North (Southbound)			W Baseline St-From East (Westbound)			N 10th Ave-From South (Northbound)			W Baseline St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	6	4	0	0	0	7	5	0	4	96	5	1	0	0	0	127	1
7:05 AM	0	7	4	0	0	0	12	13	0	9	84	6	0	0	0	4	135	4
7:10 AM	0	4	3	0	0	0	9	11	0	5	84	3	0	0	0	0	119	0
7:15 AM	0	4	6	0	0	0	8	6	0	1	97	4	1	0	0	1	126	2
7:20 AM	0	3	2	0	0	0	12	12	0	3	87	5	0	0	0	0	124	0
7:25 AM	0	9	3	0	0	0	5	10	0	4	96	5	0	0	0	2	132	2
7:30 AM	0	8	5	0	0	0	11	9	0	5	84	5	0	0	0	1	127	1
7:35 AM	0	5	6	0	0	0	15	11	0	2	104	2	2	0	0	2	145	4
7:40 AM	0	7	8	0	0	0	6	4	0	2	104	8	0	0	0	2	139	2
7:45 AM	0	3	8	0	0	0	9	12	0	5	114	3	0	0	0	0	154	0
7:50 AM	0	8	10	0	0	0	8	6	0	5	121	5	0	0	0	0	163	0
7:55 AM	0	11	5	0	0	0	8	5	0	5	114	7	0	0	0	0	155	0
8:00 AM	0	13	5	0	0	0	9	6	0	4	80	6	0	0	0	0	123	0
8:05 AM	0	9	1	0	0	0	16	7	0	4	94	10	0	0	1	1	141	2
8:10 AM	0	14	5	0	0	0	21	12	0	2	79	12	0	0	0	0	145	0
8:15 AM	0	12	10	0	0	0	15	16	0	5	91	3	0	0	0	0	152	0
8:20 AM	0	12	3	0	0	0	9	8	0	5	89	4	0	0	0	0	130	0
8:25 AM	0	14	4	0	0	0	7	4	0	1	97	5	0	0	0	0	132	0
8:30 AM	0	6	7	0	0	0	6	7	0	3	83	5	0	0	0	0	117	0
8:35 AM	0	6	6	0	0	0	9	11	0	1	82	3	0	0	0	0	118	0
8:40 AM	0	6	4	0	0	0	11	4	0	4	75	3	0	0	0	0	107	0
8:45 AM	0	7	5	0	0	0	7	8	0	4	72	5	1	0	0	0	108	1
8:50 AM	0	9	4	0	0	0	9	5	0	0	95	2	0	0	0	0	124	0
8:55 AM	0	5	5	0	0	0	11	6	0	2	95	3	0	0	2	0	127	2
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	75	64	0	0	0	110	104	0	50	1185	58	4	0	0	12	1646	16
7:15 AM	0	94	64	0	0	0	128	100	0	42	1174	72	3	0	1	9	1674	13
7:30 AM	0	116	70	0	0	0	134	100	0	45	1171	70	2	0	1	6	1706	9
7:45 AM	0	114	68	0	0	0	128	98	0	44	1119	66	0	0	1	1	1637	2
8:00 AM	0	113	59	0	0	0	130	94	0	35	1032	61	1	0	3	1	1524	5

INTERSECTION: N 10th Ave--From North/N Holladay St--From East										START TIME: 7:00 AM									
PROJECT ID#: 7059										END TIME: 9:00 AM									
QC JOB #: 10086006										DATE: 3/31/2005									

PEAK HOUR TURNING MOVEMENTS

PHF
0.96

PEAK HOUR: 7:00 AM TO 8:00 AM

PEAK HOUR LINK VOLUMES

HV = 26%
TOTAL 292
HV = 0%

PEAK 15 MINUTES: 7:45 AM TO 8:00 AM

PEAK HOUR PED CROSSING VOLUMES

0
4
0

QUALITY COUNTS

16285 SW 85th Avenue, Ste. 105
Tigard, OR 97224
Phone: 503-620-4242
Fax: 503 620-4545
email: jrw@qualitycounts.net
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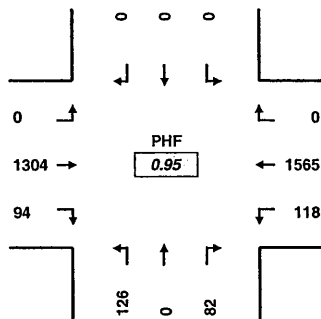
5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave--From North (Southbound)			N Holladay St--From East (Westbound)			N 10th Ave--From South (Northbound)			N Holladay St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	0	6	0	0	0	0	0	6	3	2	0	2	0	0	0	0	19	0
7:05 AM	2	5	0	0	0	0	0	9	4	2	0	4	0	0	0	0	26	0
7:10 AM	4	6	0	0	0	0	0	10	4	1	0	5	0	0	0	0	30	0
7:15 AM	4	7	0	0	0	0	0	10	0	0	0	4	0	0	0	0	25	0
7:20 AM	2	6	0	0	0	0	0	8	2	1	0	4	0	0	0	0	23	0
7:25 AM	4	3	0	0	0	0	0	7	0	1	0	3	0	0	0	0	18	0
7:30 AM	2	6	0	0	0	0	0	7	2	2	0	5	0	0	0	0	24	0
7:35 AM	4	4	0	0	0	0	0	6	3	3	0	2	0	0	0	0	22	0
7:40 AM	1	9	0	0	0	0	0	6	5	1	0	7	0	0	0	0	29	0
7:45 AM	3	8	0	0	0	0	0	8	3	3	0	1	0	0	0	0	26	0
7:50 AM	5	10	0	0	0	0	0	4	4	0	0	1	0	0	0	2	24	2
7:55 AM	1	14	0	0	0	0	0	3	4	2	0	2	0	0	0	2	26	2
8:00 AM	4	7	0	0	0	0	0	6	3	2	0	5	0	0	0	0	27	0
8:05 AM	1	6	0	0	0	0	0	7	1	0	0	2	0	0	0	0	17	0
8:10 AM	0	5	0	0	0	0	0	10	1	1	0	4	0	0	0	0	21	0
8:15 AM	0	5	0	0	0	0	0	7	3	1	0	4	0	0	0	0	20	0
8:20 AM	2	6	0	0	0	0	0	10	4	0	0	6	0	0	0	1	28	1
8:25 AM	0	5	0	0	0	0	0	8	2	5	0	7	0	0	0	0	27	0
8:30 AM	2	10	0	0	0	0	0	5	1	2	0	2	0	0	0	0	22	0
8:35 AM	5	5	0	0	0	0	0	3	2	0	0	1	0	0	0	0	16	0
8:40 AM	1	3	0	0	0	0	0	3	1	1	0	2	0	0	0	0	11	0
8:45 AM	1	7	0	0	0	0	0	3	2	1	0	1	0	0	0	0	15	0
8:50 AM	5	9	0	0	0	0	0	2	3	2	0	1	0	0	0	0	22	0
8:55 AM	3	6	0	0	0	0	0	4	1	3	0	5	0	0	0	0	22	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
7:00 AM	32	84	0	0	0	0	0	84	34	18	0	40	0	0	0	4	292	4
7:15 AM	31	85	0	0	0	0	0	82	28	16	0	40	0	0	0	4	282	4
7:30 AM	23	85	0	0	0	0	0	82	35	20	0	46	0	0	0	5	291	5
7:45 AM	24	84	0	0	0	0	0	74	29	17	0	37	0	0	0	5	265	5
8:00 AM	24	74	0	0	0	0	0	68	24	18	0	40	0	0	0	1	248	1

INTERSECTION: Grass Area--From North/Pacific Hwy--From East
 PROJECT ID#: 7059
 QC JOB #: 10086007

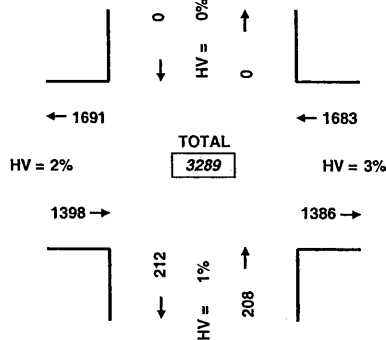
START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005

QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



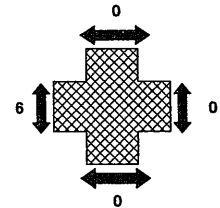
PEAK HOUR LINK VOLUMES



PEAK HOUR: 4:30 PM TO 5:30 PM

PEAK 15 MINUTES: 5:00 PM TO 5:15 PM

PEAK HOUR PED CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	Grass Area--From North (Southbound)			Pacific Hwy--From East (Westbound)			Mountain View Lane--From South (Northbound)			Pacific Hwy--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	0	0	0	94	8	10	0	13	10	119	0	0	0	0	0	254	0
4:05 PM	0	0	0	0	89	3	7	0	17	8	112	0	0	0	0	0	236	0
4:10 PM	0	0	0	0	137	9	8	0	10	8	94	0	0	0	0	2	266	2
4:15 PM	0	0	0	0	134	16	2	0	3	7	111	0	0	0	0	0	273	0
4:20 PM	0	0	0	0	109	8	7	0	11	8	91	0	0	0	0	1	234	1
4:25 PM	0	0	0	0	110	4	6	0	10	6	125	0	0	0	0	1	261	1
4:30 PM	0	0	0	0	128	6	7	0	8	8	105	0	0	0	0	0	262	0
4:35 PM	0	0	0	0	133	17	2	0	9	4	105	0	0	0	0	0	270	0
4:40 PM	0	0	0	0	113	5	4	0	10	7	126	0	0	0	0	0	265	0
4:45 PM	0	0	0	0	123	13	11	0	8	6	94	0	0	0	0	1	255	1
4:50 PM	0	0	0	0	146	11	3	0	12	12	117	0	0	0	0	0	301	0
4:55 PM	0	0	0	0	121	13	6	0	16	9	99	0	0	0	0	0	264	0
5:00 PM	0	0	0	0	124	7	11	0	13	11	107	0	0	0	0	2	273	2
5:05 PM	0	0	0	0	134	6	6	0	13	9	116	0	0	0	0	0	284	0
5:10 PM	0	0	0	0	144	7	10	0	11	8	133	0	0	0	0	0	313	0
5:15 PM	0	0	0	0	132	10	11	0	13	5	110	0	0	0	0	3	281	3
5:20 PM	0	0	0	0	125	10	4	0	5	12	91	0	0	0	0	0	247	0
5:25 PM	0	0	0	0	142	13	7	0	8	3	101	0	0	0	0	0	274	0
5:30 PM	0	0	0	0	130	5	6	0	10	5	86	0	0	0	0	0	242	0
5:35 PM	0	0	0	0	113	10	4	0	7	8	103	0	0	0	0	0	245	0
5:40 PM	0	0	0	0	135	20	2	0	9	6	108	0	0	0	0	1	280	1
5:45 PM	0	0	0	0	109	5	4	0	13	3	99	0	0	0	0	0	233	0
5:50 PM	0	0	0	0	131	6	4	0	6	9	95	0	0	0	0	0	251	0
5:55 PM	0	0	0	0	121	6	3	0	7	4	83	0	0	0	0	0	224	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	0	0	0	1437	113	73	0	127	93	1298	0	0	0	0	5	3141	5
4:15 PM	0	0	0	0	1519	113	75	0	124	95	1329	0	0	0	0	5	3255	5
4:30 PM	0	0	0	0	1565	118	82	0	126	94	1304	0	0	0	0	6	3289	6
4:45 PM	0	0	0	0	1569	125	81	0	125	94	1265	0	0	0	0	7	3259	7
5:00 PM	0	0	0	0	1540	105	72	0	115	83	1232	0	0	0	0	6	3147	6

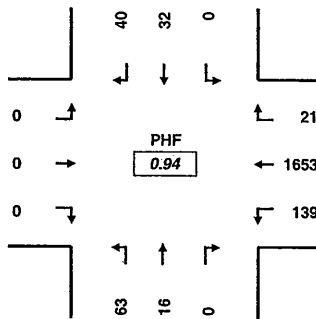
INTERSECTION: N 4th Ave-From North/N Adair St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086008

START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005



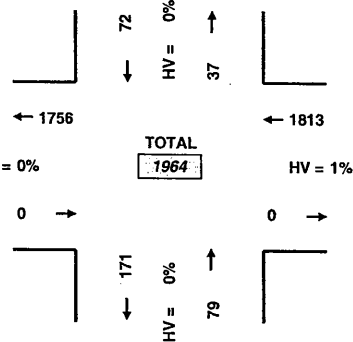
16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



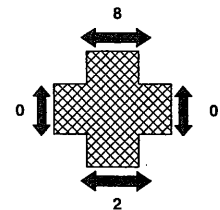
PEAK HOUR: 4:45 PM
 TO
 5:45 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 5:00 PM
 TO
 5:15 PM

PEAK HOUR PED
 CROSSING VOLUMES



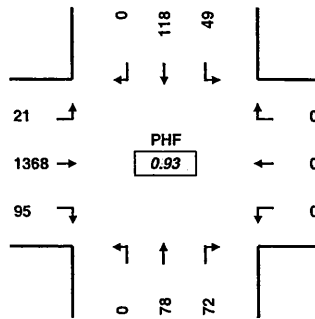
5-MINUTE COUNT PERIOD BEGINNING AT	N 4th Ave-From North (Southbound)			N Adair St-From East (Westbound)			N 4th Ave-From South (Northbound)			N Adair St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	8	2	0	2	109	6	0	0	2	0	0	0	0	0	0	0	129	0
4:05 PM	1	2	0	1	99	9	0	2	6	0	0	0	0	0	0	0	120	0
4:10 PM	0	4	0	1	129	10	0	5	2	0	0	0	0	0	0	0	151	0
4:15 PM	2	2	0	1	144	5	0	0	5	0	0	0	0	0	0	0	159	0
4:20 PM	1	0	0	3	120	14	0	1	5	0	0	0	0	0	0	0	144	0
4:25 PM	2	1	0	3	120	7	0	0	6	0	0	0	0	0	0	0	139	0
4:30 PM	6	1	0	1	115	18	0	2	3	0	0	0	1	0	0	0	146	1
4:35 PM	1	3	0	2	143	11	0	4	7	0	0	0	1	0	0	0	171	1
4:40 PM	6	2	0	4	103	12	0	0	11	0	0	0	2	0	1	0	138	3
4:45 PM	3	6	0	3	143	10	0	2	6	0	0	0	1	0	1	0	173	2
4:50 PM	5	3	0	2	150	13	0	5	1	0	0	0	2	0	0	0	179	2
4:55 PM	3	2	0	0	113	7	0	1	6	0	0	0	0	0	1	0	132	1
5:00 PM	3	2	0	2	137	11	0	2	10	0	0	0	0	0	0	0	167	0
5:05 PM	3	3	0	3	153	11	0	1	11	0	0	0	1	0	0	0	185	1
5:10 PM	6	1	0	2	144	13	0	0	5	0	0	0	0	0	0	0	171	0
5:15 PM	3	0	0	3	124	13	0	1	6	0	0	0	0	0	0	0	150	0
5:20 PM	2	3	0	2	139	10	0	1	2	0	0	0	1	0	0	0	159	1
5:25 PM	2	4	0	0	143	15	0	1	4	0	0	0	0	0	0	0	169	0
5:30 PM	4	2	0	1	147	15	0	1	5	0	0	0	1	0	0	0	175	1
5:35 PM	4	1	0	2	123	11	0	0	4	0	0	0	2	0	0	0	145	2
5:40 PM	2	5	0	1	137	10	0	1	3	0	0	0	0	0	0	0	159	0
5:45 PM	3	1	0	0	133	8	0	2	6	0	0	0	2	0	0	0	153	2
5:50 PM	2	2	0	2	128	9	0	1	9	0	0	0	0	0	1	0	153	1
5:55 PM	1	3	0	1	139	13	0	1	1	0	0	0	0	0	0	0	159	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	38	28	0	23	1488	122	0	22	60	0	0	0	7	0	3	0	1781	10
4:15 PM	41	26	0	26	1585	132	0	18	76	0	0	0	8	0	3	0	1904	11
4:30 PM	43	30	0	24	1607	144	0	20	72	0	0	0	9	0	3	0	1940	12
4:45 PM	40	32	0	21	1653	139	0	16	63	0	0	0	8	0	2	0	1964	10
5:00 PM	35	27	0	19	1647	139	0	12	66	0	0	0	7	0	1	0	1945	8

INTERSECTION: North 4th Avenue-From North/W Baseline Street-From East
 PROJECT ID#: 7059
 QC JOB #: 10086009

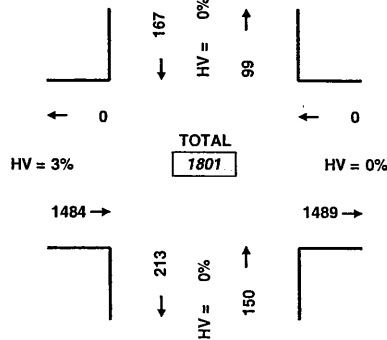
START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005

QC
QUALITY
COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



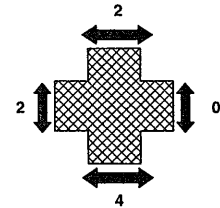
PEAK HOUR LINK VOLUMES



PEAK HOUR: 4:15 PM
 TO
 5:15 PM

PEAK 15 MINUTES: 5:00 PM
 TO
 5:15 PM

PEAK HOUR PED
 CROSSING VOLUMES



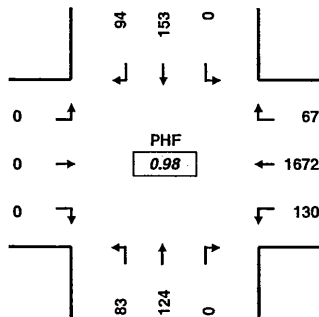
5-MINUTE COUNT PERIOD BEGINNING AT	North 4th Avenue-From North (Southbound)			W Baseline Street-From East (Westbound)			North 4th Avenue-From South (Northbound)			W Baseline Street-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	6	3	0	0	0	8	3	0	3	103	0	0	0	0	0	126	0
4:05 PM	0	7	3	0	0	0	5	5	0	5	118	3	0	0	0	0	146	0
4:10 PM	0	8	1	0	0	0	9	3	0	9	104	6	0	0	0	1	140	1
4:15 PM	0	10	4	0	0	0	10	7	0	7	93	1	1	0	0	0	132	1
4:20 PM	0	10	5	0	0	0	10	5	0	8	111	1	1	0	1	2	150	4
4:25 PM	0	5	4	0	0	0	2	4	0	9	116	2	0	0	0	0	142	0
4:30 PM	0	11	5	0	0	0	9	4	0	4	117	3	0	0	0	0	153	0
4:35 PM	0	12	4	0	0	0	3	6	0	6	97	4	0	0	1	0	132	1
4:40 PM	0	13	2	0	0	0	2	10	0	7	137	1	0	0	0	0	172	0
4:45 PM	0	6	6	0	0	0	5	8	0	5	115	1	0	0	0	0	146	0
4:50 PM	0	11	10	0	0	0	3	2	0	12	116	4	0	0	0	0	158	0
4:55 PM	0	7	1	0	0	0	7	7	0	7	104	1	0	0	1	0	134	1
5:00 PM	0	9	1	0	0	0	5	8	0	11	129	2	0	0	0	0	165	0
5:05 PM	0	10	5	0	0	0	10	12	0	11	101	1	0	0	0	0	150	0
5:10 PM	0	14	2	0	0	0	6	5	0	8	132	0	0	0	1	0	167	1
5:15 PM	0	11	2	0	0	0	13	4	0	8	111	2	0	0	0	0	151	0
5:20 PM	0	9	2	0	0	0	5	3	0	8	109	0	0	0	0	0	136	0
5:25 PM	0	13	4	0	0	0	7	4	0	6	100	2	0	0	3	0	136	3
5:30 PM	0	15	3	0	0	0	8	4	0	6	90	1	1	0	0	0	127	1
5:35 PM	0	9	3	0	0	0	6	4	0	9	111	0	0	0	0	0	142	0
5:40 PM	0	10	4	0	0	0	6	6	0	6	87	1	0	0	0	0	120	0
5:45 PM	0	8	3	0	0	0	5	4	0	8	100	2	0	0	0	0	130	0
5:50 PM	0	10	0	0	0	0	3	10	0	6	111	0	0	0	0	0	140	0
5:55 PM	0	12	1	0	0	0	4	1	0	6	90	2	0	0	0	0	116	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	106	48	0	0	0	73	64	0	82	1331	27	2	0	3	3	1731	8
4:15 PM	0	118	49	0	0	0	72	78	0	95	1368	21	2	0	4	2	1801	8
4:30 PM	0	126	44	0	0	0	75	73	0	93	1368	21	0	0	6	0	1800	6
4:45 PM	0	124	43	0	0	0	81	67	0	97	1305	15	1	0	5	0	1732	6
5:00 PM	0	130	30	0	0	0	78	65	0	93	1271	13	1	0	4	0	1680	5

INTERSECTION: N 10th-From North/N Adair St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086010

START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005

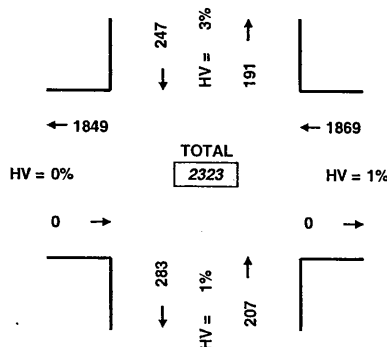
QC
QUALITY
COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



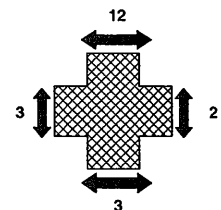
PEAK HOUR: 4:45 PM
 TO
 5:45 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 5:00 PM
 TO
 5:15 PM

PEAK HOUR PED
 CROSSING VOLUMES



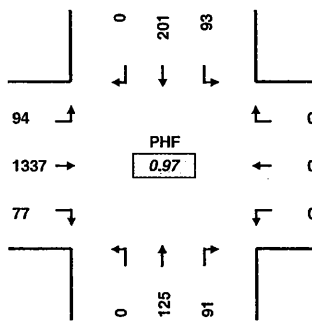
5-MINUTE COUNT PERIOD BEGINNING AT	N 10th-From North (Southbound)			N Adair St-From East (Westbound)			N 10th-From South (Northbound)			N Adair St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	0	0	6	99	12	0	12	8	0	0	0	0	0	0	0	137	0
4:05 PM	4	14	0	3	123	15	0	6	5	0	0	0	0	0	0	0	170	0
4:10 PM	3	9	0	5	153	13	0	6	4	0	0	0	0	0	0	1	193	1
4:15 PM	13	15	0	4	130	12	0	14	4	0	0	0	0	1	0	0	192	1
4:20 PM	4	13	0	7	110	11	0	7	6	0	0	0	2	0	1	1	158	4
4:25 PM	7	14	0	5	127	12	0	9	10	0	0	0	0	0	0	1	184	1
4:30 PM	8	8	0	2	129	22	0	8	4	0	0	0	0	0	0	0	181	0
4:35 PM	12	13	0	4	123	12	0	10	5	0	0	0	1	0	1	0	179	2
4:40 PM	4	14	0	3	120	8	0	13	10	0	0	0	3	0	1	1	172	5
4:45 PM	4	14	0	9	153	15	0	9	6	0	0	0	1	1	0	3	210	5
4:50 PM	10	12	0	6	126	10	0	16	5	0	0	0	0	1	0	0	185	1
4:55 PM	10	16	0	9	115	11	0	11	7	0	0	0	0	0	0	0	179	0
5:00 PM	4	14	0	8	135	14	0	5	6	0	0	0	4	0	1	0	186	5
5:05 PM	12	9	0	5	141	14	0	12	10	0	0	0	1	0	0	0	203	1
5:10 PM	9	16	0	6	144	9	0	9	12	0	0	0	0	0	0	0	205	0
5:15 PM	6	5	0	3	146	10	0	15	11	0	0	0	1	0	2	0	196	3
5:20 PM	7	10	0	8	144	8	0	12	5	0	0	0	1	0	0	0	194	1
5:25 PM	7	16	0	3	152	11	0	9	4	0	0	0	0	0	0	0	202	0
5:30 PM	6	14	0	2	151	9	0	6	7	0	0	0	2	0	0	0	195	2
5:35 PM	9	13	0	5	145	7	0	12	4	0	0	0	1	0	0	0	195	1
5:40 PM	10	14	0	3	120	12	0	8	6	0	0	0	1	0	0	0	173	1
5:45 PM	7	9	0	3	128	10	0	6	15	0	0	0	0	0	0	0	178	0
5:50 PM	9	7	0	5	148	14	0	8	10	0	0	0	0	0	0	0	201	0
5:55 PM	8	6	0	8	134	10	0	7	5	0	0	0	0	0	1	0	178	1
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	79	142	0	63	1508	153	0	121	74	0	0	0	7	3	3	7	2140	20
4:15 PM	97	158	0	68	1553	150	0	123	85	0	0	0	12	3	4	6	2234	25
4:30 PM	93	147	0	66	1628	144	0	129	85	0	0	0	12	2	5	4	2292	23
4:45 PM	94	153	0	67	1672	130	0	124	83	0	0	0	12	2	3	3	2323	20
5:00 PM	94	133	0	59	1688	128	0	109	95	0	0	0	11	0	4	0	2306	15

INTERSECTION: N 10th Ave-From North/W Baseline St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086011

START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005

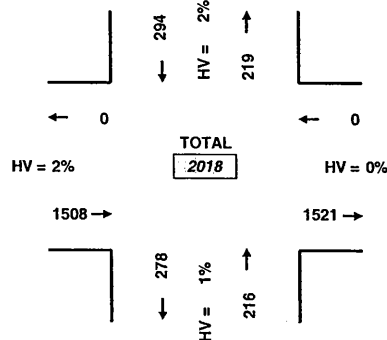
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



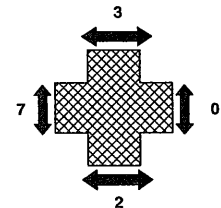
PEAK HOUR: 4:30 PM TO 5:30 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 4:45 PM TO 5:00 PM

PEAK HOUR PED CROSSING VOLUMES



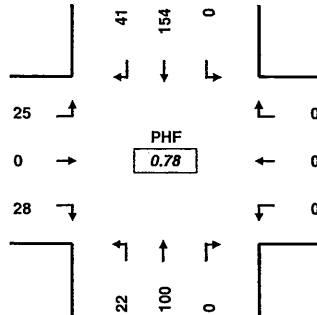
5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave-From North (Southbound)			W Baseline St-From East (Westbound)			N 10th Ave-From South (Northbound)			W Baseline St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	13	7	0	0	0	9	9	0	3	106	9	0	0	0	0	156	0
4:05 PM	0	16	10	0	0	0	8	7	0	7	102	8	0	0	0	0	158	0
4:10 PM	0	14	8	0	0	0	11	5	0	6	110	6	0	0	2	0	160	2
4:15 PM	0	14	7	0	0	0	9	4	0	8	97	6	0	1	0	0	145	1
4:20 PM	0	18	8	0	0	0	12	13	0	5	91	7	0	0	0	0	154	0
4:25 PM	0	19	4	0	0	0	7	5	0	4	107	6	1	0	0	0	152	1
4:30 PM	0	25	6	0	0	0	4	8	0	6	121	8	0	0	0	0	178	0
4:35 PM	0	13	7	0	0	0	7	8	0	7	97	5	0	0	0	0	144	0
4:40 PM	0	13	12	0	0	0	5	18	0	7	122	8	0	0	0	3	185	3
4:45 PM	0	17	8	0	0	0	12	11	0	11	108	8	2	0	1	0	175	3
4:50 PM	0	15	10	0	0	0	7	7	0	6	129	8	0	0	0	0	182	0
4:55 PM	0	20	11	0	0	0	11	8	0	6	99	9	0	0	0	0	164	0
5:00 PM	0	21	5	0	0	0	8	8	0	3	112	6	0	0	0	0	163	0
5:05 PM	0	17	4	0	0	0	5	10	0	3	115	12	0	0	0	0	166	0
5:10 PM	0	18	13	0	0	0	8	17	0	5	118	5	1	0	0	2	184	3
5:15 PM	0	13	5	0	0	0	8	10	0	10	104	13	0	0	1	2	163	3
5:20 PM	0	8	4	0	0	0	9	12	0	9	103	7	0	0	0	0	152	0
5:25 PM	0	21	8	0	0	0	7	8	0	4	109	5	0	0	0	0	162	0
5:30 PM	0	21	3	0	0	0	8	10	0	5	80	4	0	0	0	0	131	0
5:35 PM	0	12	11	0	0	0	7	4	0	2	98	9	0	0	3	0	143	3
5:40 PM	0	19	6	0	0	0	9	11	0	5	91	8	0	0	0	0	149	0
5:45 PM	0	16	4	0	0	0	9	14	0	4	100	3	0	0	0	0	150	0
5:50 PM	0	22	5	0	0	0	4	9	0	7	103	8	0	0	0	0	158	0
5:55 PM	0	13	3	0	0	0	10	9	0	7	90	5	0	0	2	0	137	2
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	0	197	98	0	0	0	102	103	0	76	1289	88	3	1	3	3	1953	10
4:15 PM	0	210	95	0	0	0	95	117	0	71	1316	88	4	1	1	5	1992	11
4:30 PM	0	201	93	0	0	0	91	125	0	77	1337	94	3	0	2	7	2018	12
4:45 PM	0	202	88	0	0	0	99	116	0	69	1266	94	3	0	5	4	1934	12
5:00 PM	0	201	71	0	0	0	92	122	0	64	1223	85	1	0	6	4	1858	11

INTERSECTION: N 10th Ave--From North/Trees--From East
 PROJECT ID#: 7059
 QC JOB #: 10086012

START TIME: 4:00 PM
 END TIME: 6:00 PM
 DATE: 3/31/2005

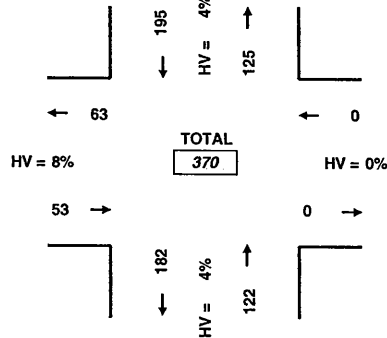
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



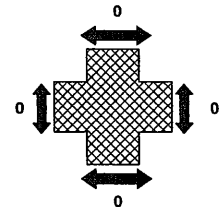
PEAK HOUR: 4:00 PM
 TO
 5:00 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 4:45 PM
 TO
 5:00 PM

PEAK HOUR PED
 CROSSING VOLUMES



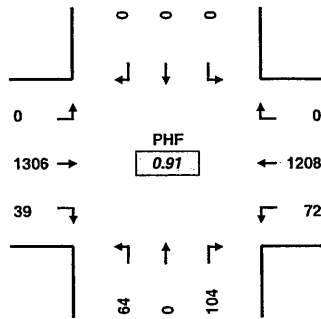
5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave--From North (Southbound)			Trees--From East (Westbound)			N 10th Ave--From South (Northbound)			N Holladay St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	4	13	0	0	0	0	0	5	3	3	0	0	0	0	0	0	28	0
4:05 PM	1	6	0	0	0	0	0	9	5	4	0	2	0	0	0	0	27	0
4:10 PM	6	7	0	0	0	0	0	9	1	1	0	3	0	0	0	0	27	0
4:15 PM	2	15	0	0	0	0	0	5	0	5	0	2	0	0	0	0	29	0
4:20 PM	3	13	0	0	0	0	0	11	2	1	0	3	0	0	0	0	33	0
4:25 PM	1	13	0	0	0	0	0	9	0	3	0	3	0	0	0	0	29	0
4:30 PM	3	12	0	0	0	0	0	3	1	1	0	2	0	0	0	0	22	0
4:35 PM	0	9	0	0	0	0	0	12	0	2	0	2	0	0	0	0	25	0
4:40 PM	3	14	0	0	0	0	0	10	0	3	0	1	0	0	0	0	31	0
4:45 PM	9	18	0	0	0	0	0	10	3	1	0	2	0	0	0	0	43	0
4:50 PM	6	14	0	0	0	0	0	10	2	3	0	0	0	0	0	0	35	0
4:55 PM	3	20	0	0	0	0	0	7	5	1	0	5	0	0	0	0	41	0
5:00 PM	2	7	0	0	0	0	0	6	1	7	0	3	0	0	0	0	26	0
5:05 PM	0	1	0	0	0	0	0	9	1	4	0	1	0	0	0	0	16	0
5:10 PM	1	6	0	0	0	0	0	6	2	2	0	3	0	0	0	0	20	0
5:15 PM	1	6	0	0	0	0	0	8	0	2	0	0	0	0	0	0	17	0
5:20 PM	5	9	0	0	0	0	0	7	1	5	0	2	0	0	0	0	29	0
5:25 PM	2	8	0	0	0	0	0	7	2	2	0	1	0	0	0	0	22	0
5:30 PM	3	11	0	0	0	0	0	7	0	0	0	1	0	0	0	0	22	0
5:35 PM	1	10	0	0	0	0	0	10	1	3	0	0	0	0	0	0	25	0
5:40 PM	0	6	0	0	0	0	0	6	1	1	0	0	0	0	0	0	14	0
5:45 PM	2	12	0	0	0	0	0	6	1	0	0	1	0	0	0	0	22	0
5:50 PM	2	6	0	0	0	0	0	7	2	2	0	2	0	0	0	0	21	0
5:55 PM	2	11	0	0	0	0	0	6	0	0	0	1	0	0	0	0	20	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
4:00 PM	41	154	0	0	0	0	0	100	22	28	0	25	0	0	0	0	370	0
4:15 PM	33	142	0	0	0	0	0	98	17	33	0	27	0	0	0	0	350	0
4:30 PM	35	124	0	0	0	0	0	95	18	33	0	22	0	0	0	0	327	0
4:45 PM	33	116	0	0	0	0	0	93	19	31	0	18	0	0	0	0	310	0
5:00 PM	21	93	0	0	0	0	0	85	12	28	0	15	0	0	0	0	254	0

INTERSECTION: Grass Area--From North/Pacific Ave--From East
 PROJECT ID#: 7059
 QC JOB #: 10086013

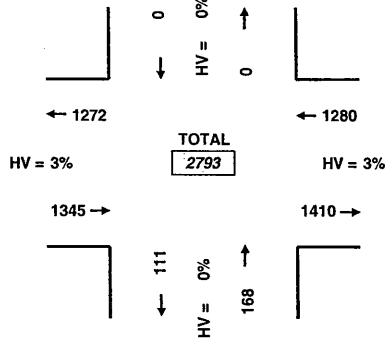
START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005

QC
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



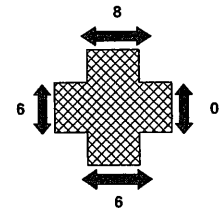
PEAK HOUR LINK VOLUMES



PEAK HOUR: 12:00 PM
 TO
 1:00 PM

PEAK 15 MINUTES: 12:30 PM
 TO
 12:45 PM

**PEAK HOUR PED
 CROSSING VOLUMES**



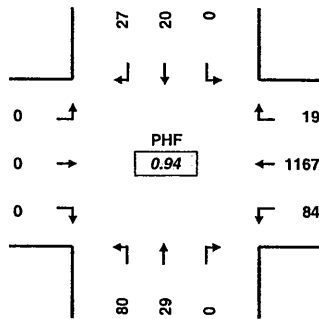
5-MINUTE COUNT PERIOD BEGINNING AT	Grass Area--From North (Southbound)			Pacific Ave--From East (Westbound)			Mt View Ln--From South (Northbound)			Pacific Ave--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	0	0	0	75	11	4	0	3	3	110	0	0	0	0	0	206	0
11:05 AM	0	0	0	0	95	3	3	0	7	6	101	0	0	0	0	0	215	0
11:10 AM	0	0	0	0	81	2	0	0	5	2	100	0	1	0	0	0	190	1
11:15 AM	0	0	0	0	82	7	0	0	2	5	113	0	0	0	0	0	209	0
11:20 AM	0	0	0	0	85	3	4	0	0	4	97	0	0	0	0	0	193	0
11:25 AM	0	0	0	0	94	4	2	0	6	3	99	0	0	0	0	0	208	0
11:30 AM	0	0	0	0	97	4	6	0	6	2	124	0	0	0	0	0	239	0
11:35 AM	0	0	0	0	88	4	5	0	4	4	90	0	1	0	0	0	195	1
11:40 AM	0	0	0	0	112	2	3	0	5	5	91	0	0	0	0	0	218	0
11:45 AM	0	0	0	0	100	4	2	0	3	2	113	0	0	0	0	3	224	3
11:50 AM	0	0	0	0	83	5	4	0	4	4	104	0	0	0	0	0	204	0
11:55 AM	0	0	0	0	91	2	3	0	5	4	89	0	1	0	0	2	194	3
12:00 PM	0	0	0	0	92	3	9	0	6	3	127	0	0	0	0	1	240	1
12:05 PM	0	0	0	0	85	3	6	0	6	2	102	0	0	0	0	0	204	0
12:10 PM	0	0	0	0	78	6	5	0	10	1	87	0	1	0	3	0	187	4
12:15 PM	0	0	0	0	101	11	5	0	3	5	107	0	0	0	0	0	232	0
12:20 PM	0	0	0	0	112	4	11	0	4	0	109	0	0	0	0	0	240	0
12:25 PM	0	0	0	0	115	9	19	0	7	2	86	0	0	0	0	0	238	0
12:30 PM	0	0	0	0	107	3	16	0	6	2	142	0	0	0	0	1	276	1
12:35 PM	0	0	0	0	93	7	7	0	3	6	109	0	2	0	0	2	225	4
12:40 PM	0	0	0	0	111	5	13	0	8	5	127	0	1	0	2	0	269	3
12:45 PM	0	0	0	0	93	5	7	0	5	2	102	0	2	0	0	0	214	2
12:50 PM	0	0	0	0	113	6	1	0	3	5	107	0	1	0	1	2	235	4
12:55 PM	0	0	0	0	108	10	5	0	3	6	101	0	1	0	0	0	233	1
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	0	0	0	1083	51	36	0	50	44	1231	0	3	0	0	5	2495	8
11:15 AM	0	0	0	0	1087	47	49	0	57	39	1236	0	3	0	3	6	2515	12
11:30 AM	0	0	0	0	1154	57	78	0	63	34	1229	0	3	0	3	6	2615	12
11:45 AM	0	0	0	0	1168	62	100	0	65	36	1302	0	5	0	5	9	2733	19
12:00 PM	0	0	0	0	1208	72	104	0	64	39	1306	0	8	0	6	6	2793	20

INTERSECTION: N 4th Ave-From North/N Adair St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086014

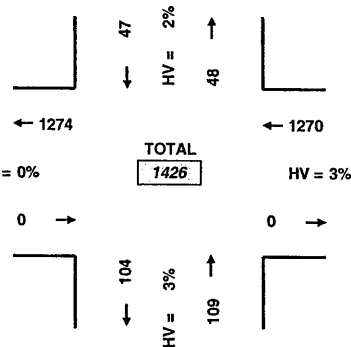
START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005

QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503-620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



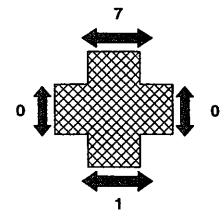
PEAK HOUR LINK VOLUMES



PEAK HOUR: 12:00 PM TO 1:00 PM

PEAK 15 MINUTES: 12:15 PM TO 12:30 PM

PEAK HOUR PED CROSSING VOLUMES



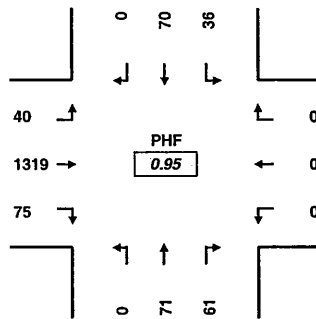
5-MINUTE COUNT PERIOD BEGINNING AT	N 4th Ave-From North (Southbound)			N Adair St-From East (Westbound)			N 4th Ave-From South (Northbound)			N Adair St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	1	1	0	2	88	7	0	4	9	0	0	0	0	0	0	0	112	0
11:05 AM	2	0	0	2	87	8	0	1	8	0	0	0	1	0	0	0	108	1
11:10 AM	2	3	0	1	78	4	0	2	0	0	0	0	0	0	1	0	90	1
11:15 AM	3	2	0	0	90	7	0	1	4	0	0	0	0	0	0	0	107	0
11:20 AM	2	2	0	1	85	8	0	3	5	0	0	0	0	0	0	0	106	0
11:25 AM	2	4	0	1	92	5	0	0	7	0	0	0	0	0	0	0	111	0
11:30 AM	1	2	0	1	103	6	0	1	4	0	0	0	1	0	0	0	118	1
11:35 AM	1	3	0	2	102	7	0	0	4	0	0	0	0	0	0	1	119	1
11:40 AM	1	1	0	4	105	10	0	3	5	0	0	0	1	0	1	0	129	2
11:45 AM	2	2	0	0	86	6	0	3	8	0	0	0	0	0	0	0	107	0
11:50 AM	0	0	0	0	96	12	0	0	4	0	0	0	0	0	0	0	112	0
11:55 AM	1	1	0	1	99	7	0	3	5	0	0	0	1	0	0	0	117	1
12:00 PM	4	1	0	1	85	5	0	1	7	0	0	0	2	0	0	0	84	2
12:05 PM	2	1	0	1	87	7	0	4	10	0	0	0	0	0	0	0	112	0
12:10 PM	0	4	0	1	85	4	0	2	0	0	0	0	0	0	1	0	96	1
12:15 PM	3	1	0	1	101	5	0	3	8	0	0	0	0	0	0	0	122	0
12:20 PM	1	1	0	1	103	5	0	4	4	0	0	0	0	0	0	0	119	0
12:25 PM	4	4	0	3	115	5	0	0	9	0	0	0	1	0	0	0	140	1
12:30 PM	4	0	0	1	107	8	0	4	7	0	0	0	0	0	0	0	131	0
12:35 PM	2	2	0	3	85	14	0	0	4	0	0	0	0	0	0	0	110	0
12:40 PM	0	1	0	3	110	11	0	1	9	0	0	0	1	0	0	0	135	1
12:45 PM	1	2	0	3	94	3	0	2	12	0	0	0	1	0	0	0	117	1
12:50 PM	2	0	0	1	111	9	0	3	6	0	0	0	1	0	0	0	132	1
12:55 PM	4	3	0	0	104	8	0	5	4	0	0	0	1	0	0	0	128	1
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	18	21	0	15	1111	87	0	21	63	0	0	0	4	0	2	1	1336	7
11:15 AM	19	23	0	13	1095	84	0	21	63	0	0	0	5	0	2	1	1318	8
11:30 AM	20	21	0	16	1147	79	0	24	68	0	0	0	6	0	2	1	1375	9
11:45 AM	23	18	0	16	1139	89	0	25	75	0	0	0	5	0	1	0	1385	6
12:00 PM	27	20	0	19	1167	84	0	29	80	0	0	0	7	0	1	0	1426	8

INTERSECTION: N 4th Ave--From North/W Baseline St--From East
 PROJECT ID#: 7059
 QC JOB #: 10086015

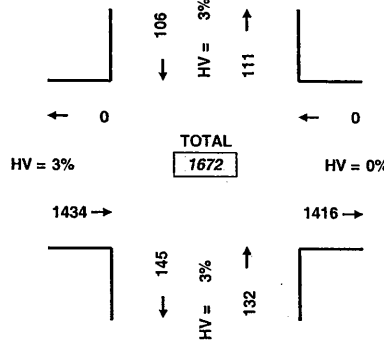
START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005

QC
QUALITY
COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503-620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



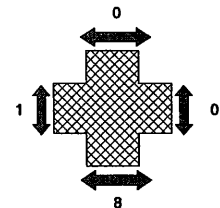
PEAK HOUR LINK VOLUMES



PEAK HOUR: 12:00 PM
 TO
 1:00 PM

PEAK 15 MINUTES: 12:30 PM
 TO
 12:45 PM

**PEAK HOUR PED
 CROSSING VOLUMES**



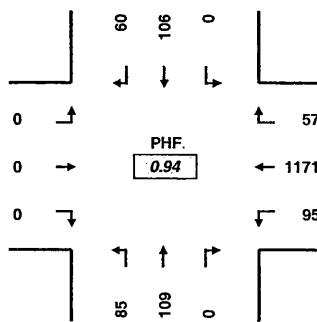
5-MINUTE COUNT PERIOD BEGINNING AT	N 4th Ave--From North (Southbound)			W Baseline St--From East (Westbound)			N 4th Ave--From South (Northbound)			W Baseline St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	3	7	0	0	0	9	8	0	4	92	5	0	0	0	0	128	0
11:05 AM	0	5	3	0	0	0	4	6	0	5	108	4	0	0	0	0	135	0
11:10 AM	0	2	3	0	0	0	5	0	0	3	111	2	0	0	0	0	126	0
11:15 AM	0	4	7	0	0	0	7	5	0	4	87	3	0	0	0	0	117	0
11:20 AM	0	4	6	0	0	0	2	5	0	7	104	3	1	0	0	0	131	1
11:25 AM	0	2	5	0	0	0	11	2	0	5	99	1	1	0	0	0	125	1
11:30 AM	0	6	1	0	0	0	4	3	0	6	114	2	1	0	0	0	136	1
11:35 AM	0	8	4	0	0	0	4	4	0	5	96	1	0	0	0	1	122	1
11:40 AM	0	5	6	0	0	0	4	4	0	11	93	3	1	0	0	0	126	1
11:45 AM	0	5	3	0	0	0	5	8	0	5	121	3	0	0	2	0	150	2
11:50 AM	0	7	7	0	0	0	9	3	0	3	91	2	0	0	0	0	122	0
11:55 AM	0	5	3	0	0	0	5	5	0	6	108	1	0	0	3	0	133	3
12:00 PM	0	3	1	0	0	0	5	8	0	2	102	1	0	0	2	0	122	2
12:05 PM	0	7	3	0	0	0	5	7	0	7	95	8	0	0	0	0	132	0
12:10 PM	0	5	3	0	0	0	7	1	0	4	90	2	0	0	1	0	112	1
12:15 PM	0	5	1	0	0	0	7	6	0	7	106	4	0	0	2	0	136	2
12:20 PM	0	4	2	0	0	0	8	4	0	9	114	4	0	0	0	0	145	0
12:25 PM	0	7	3	0	0	0	8	10	0	10	112	1	0	0	0	0	151	0
12:30 PM	0	3	4	0	0	0	5	6	0	2	119	4	0	0	0	1	143	1
12:35 PM	0	6	8	0	0	0	1	4	0	11	121	0	0	0	0	0	151	0
12:40 PM	0	6	4	0	0	0	1	7	0	5	120	2	0	0	2	0	145	2
12:45 PM	0	5	5	0	0	0	6	9	0	5	116	4	0	0	0	0	150	0
12:50 PM	0	11	0	0	0	0	1	5	0	8	106	4	0	0	1	0	135	1
12:55 PM	0	8	2	0	0	0	7	4	0	5	118	6	0	0	0	0	150	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	56	55	0	0	0	69	53	0	64	1224	30	4	0	5	1	1551	10
11:15 AM	0	61	49	0	0	0	68	55	0	65	1200	30	4	0	8	1	1528	13
11:30 AM	0	67	37	0	0	0	71	63	0	75	1242	32	2	0	10	1	1587	13
11:45 AM	0	63	42	0	0	0	66	69	0	71	1299	32	0	0	12	1	1642	13
12:00 PM	0	70	36	0	0	0	61	71	0	75	1319	40	0	0	8	1	1672	9

INTERSECTION: N 10th Ave-From North/N Adair St-From East
 PROJECT ID#: 7059
 QC JOB #: 10086016

START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005

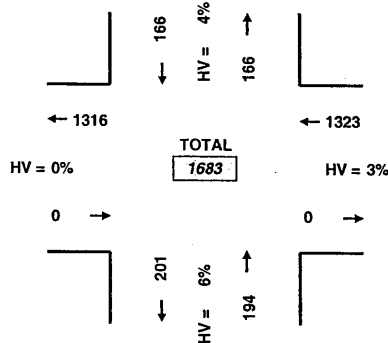
QC
QUALITY COUNTS
 16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



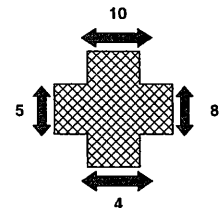
PEAK HOUR: 12:00 PM TO 1:00 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 12:15 PM TO 12:30 PM

PEAK HOUR PED CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave-From North (Southbound)			N Adair St-From East (Westbound)			N 10th Ave-From South (Northbound)			N Adair St-From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	5	10	0	5	84	7	0	2	5	0	0	0	0	0	0	1	118	1
11:05 AM	7	5	0	7	93	8	0	6	5	0	0	0	0	0	1	0	131	1
11:10 AM	8	7	0	4	68	4	0	8	4	0	0	0	0	0	0	1	103	1
11:15 AM	7	8	0	3	74	7	0	4	6	0	0	0	0	0	0	0	109	0
11:20 AM	3	6	0	2	90	5	0	6	4	0	0	0	0	0	0	3	116	3
11:25 AM	3	3	0	1	92	8	0	9	3	0	0	0	0	0	1	0	119	1
11:30 AM	6	3	0	5	94	10	0	8	4	0	0	0	2	0	1	0	130	3
11:35 AM	9	18	0	5	101	11	0	12	3	0	0	0	0	3	0	1	159	4
11:40 AM	11	15	0	4	97	3	0	6	6	0	0	0	0	2	0	0	142	2
11:45 AM	5	16	0	9	92	5	0	2	7	0	0	0	2	0	1	1	136	4
11:50 AM	9	9	0	8	83	9	0	7	8	0	0	0	2	0	0	5	133	7
11:55 AM	6	9	0	4	100	11	0	9	3	0	0	0	0	0	0	2	142	2
12:00 PM	6	9	0	8	76	9	0	7	8	0	0	0	0	0	0	0	123	0
12:05 PM	4	12	0	6	78	11	0	14	5	0	0	0	1	0	0	0	130	1
12:10 PM	1	8	0	4	94	11	0	9	4	0	0	0	0	0	0	0	131	0
12:15 PM	3	7	0	4	109	10	0	8	6	0	0	0	0	0	0	0	147	0
12:20 PM	6	6	0	6	105	4	0	13	8	0	0	0	1	3	0	0	148	4
12:25 PM	9	15	0	5	97	5	0	7	15	0	0	0	0	1	1	0	153	2
12:30 PM	6	9	0	1	109	12	0	5	5	0	0	0	2	0	0	0	147	2
12:35 PM	5	8	0	6	95	5	0	9	3	0	0	0	1	1	2	0	131	4
12:40 PM	8	8	0	3	95	6	0	8	7	0	0	0	1	0	0	1	135	2
12:45 PM	4	8	0	6	87	6	0	12	10	0	0	0	2	0	0	3	133	5
12:50 PM	4	9	0	6	127	9	0	8	7	0	0	0	0	1	1	1	170	3
12:55 PM	4	7	0	2	99	7	0	9	7	0	0	0	2	2	0	0	135	4
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	79	109	0	57	1068	88	0	79	58	0	0	0	6	5	4	14	1538	29
11:15 AM	70	116	0	59	1071	100	0	93	61	0	0	0	7	5	3	12	1570	27
11:30 AM	75	127	0	68	1126	99	0	102	77	0	0	0	8	9	3	9	1674	29
11:45 AM	68	116	0	64	1133	98	0	98	79	0	0	0	10	5	4	9	1656	28
12:00 PM	60	106	0	57	1171	95	0	109	85	0	0	0	10	8	4	5	1683	27

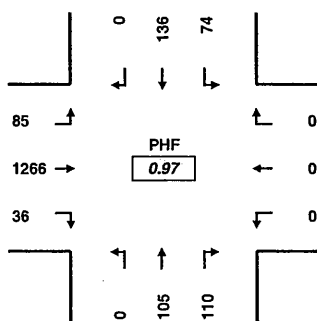
INTERSECTION: N 10th Ave--From North/W Baseline St--From East
 PROJECT ID#: 7059
 QC JOB #: 10086017

START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005



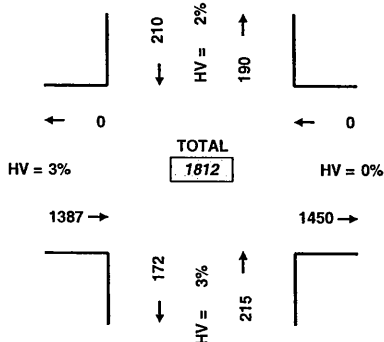
16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503 620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



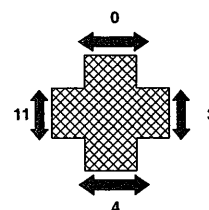
PEAK HOUR: 12:00 PM
 TO
 1:00 PM

PEAK HOUR LINK VOLUMES



PEAK 15 MINUTES: 12:45 PM
 TO
 1:00 PM

PEAK HOUR PED
 CROSSING VOLUMES



5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave--From North (Southbound)			W Baseline St--From East (Westbound)			N 10th Ave--From South (Northbound)			W Baseline St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	10	1	0	0	0	10	4	0	3	106	5	0	0	0	7	139	7
11:05 AM	0	10	8	0	0	0	11	10	0	1	106	3	1	0	1	2	149	4
11:10 AM	0	2	7	0	0	0	7	6	0	1	105	8	0	0	0	0	136	0
11:15 AM	0	7	9	0	0	0	9	4	0	6	109	4	0	0	0	0	148	0
11:20 AM	0	4	5	0	0	0	9	6	0	7	92	2	1	0	0	1	125	2
11:25 AM	0	13	1	0	0	0	7	6	0	4	97	8	0	0	0	0	136	0
11:30 AM	0	10	1	0	0	0	11	4	0	3	105	7	1	0	0	1	141	2
11:35 AM	0	11	14	0	0	0	0	4	0	2	104	9	3	1	0	4	144	8
11:40 AM	0	10	17	0	0	0	9	5	0	2	77	8	4	3	0	3	128	10
11:45 AM	0	9	12	0	0	0	13	3	0	4	103	7	0	0	0	4	151	4
11:50 AM	0	13	4	0	0	0	5	7	0	2	117	5	0	0	2	0	153	2
11:55 AM	0	12	8	0	0	0	14	2	0	6	107	10	0	0	0	0	159	0
12:00 PM	0	18	5	0	0	0	8	11	0	5	87	6	0	1	0	0	140	1
12:05 PM	0	15	7	0	0	0	7	7	0	2	110	12	0	0	0	0	160	0
12:10 PM	0	13	3	0	0	0	13	4	0	2	105	4	0	1	0	1	144	2
12:15 PM	0	11	8	0	0	0	10	8	0	0	82	9	0	0	1	2	128	3
12:20 PM	0	8	5	0	0	0	10	14	0	5	104	10	0	0	0	0	156	0
12:25 PM	0	12	8	0	0	0	10	7	0	2	117	6	0	0	0	1	162	1
12:30 PM	0	9	8	0	0	0	6	3	0	3	125	5	0	0	0	0	159	0
12:35 PM	0	9	7	0	0	0	7	7	0	5	111	7	0	1	0	0	153	1
12:40 PM	0	8	7	0	0	0	8	7	0	1	105	7	0	0	2	0	143	2
12:45 PM	0	10	5	0	0	0	6	11	0	2	126	10	0	0	0	3	170	3
12:50 PM	0	14	0	0	0	0	13	8	0	3	101	4	0	0	0	4	143	4
12:55 PM	0	9	11	0	0	0	12	18	0	6	93	5	0	0	1	0	154	1
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	0	111	87	0	0	0	105	61	0	41	1228	76	10	4	3	22	1709	39
11:15 AM	0	135	86	0	0	0	105	63	0	45	1213	82	9	6	2	14	1729	31
11:30 AM	0	142	92	0	0	0	110	76	0	35	1218	93	8	6	3	16	1766	33
11:45 AM	0	137	82	0	0	0	111	80	0	37	1273	88	0	3	5	8	1808	16
12:00 PM	0	136	74	0	0	0	110	105	0	36	1266	85	0	3	4	11	1812	18

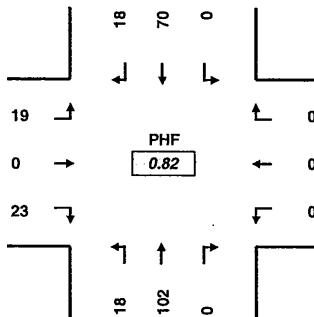
INTERSECTION: N 10th Ave--From North/Trees--From East
 PROJECT ID#: 7059
 QC JOB #: 10086018

START TIME: 11:00 AM
 END TIME: 1:00 PM
 DATE: 4/2/2005



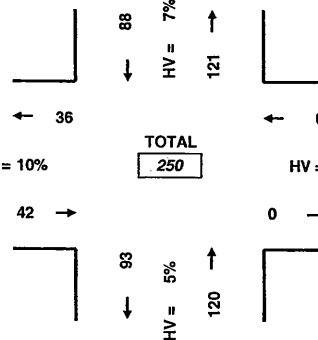
16285 SW 85th Avenue, Ste. 105
 Tigard, OR 97224
 Phone: 503-620-4242
 Fax: 503-620-4545
 email: jrw@qualitycounts.net
 www.qualitycounts.net

PEAK HOUR TURNING MOVEMENTS



PHF
0.82

PEAK HOUR LINK VOLUMES

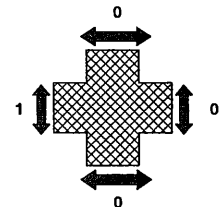


TOTAL
250

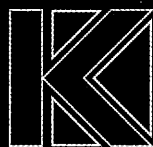
PEAK HOUR: 11:30 AM
TO
12:30 PM

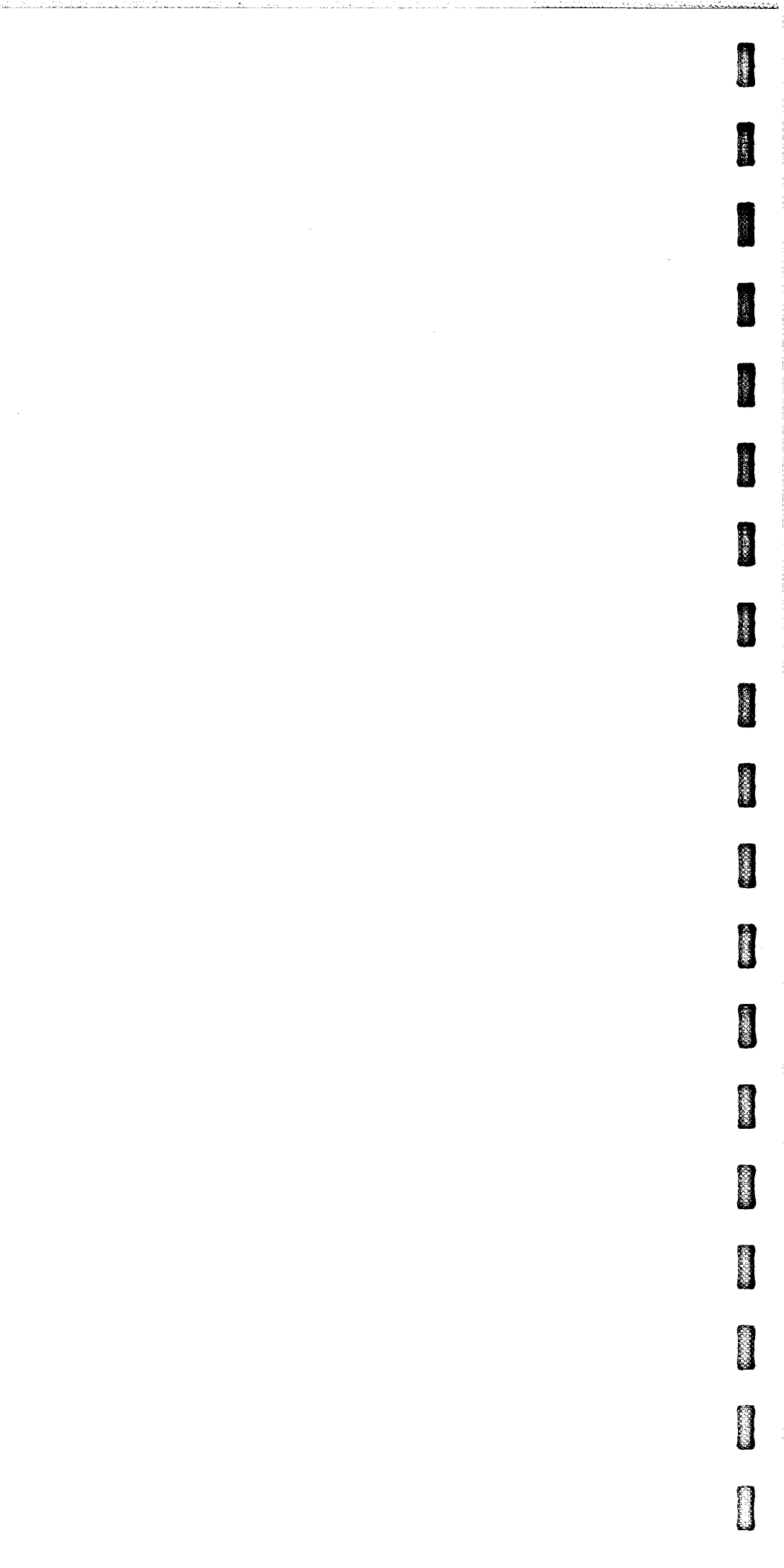
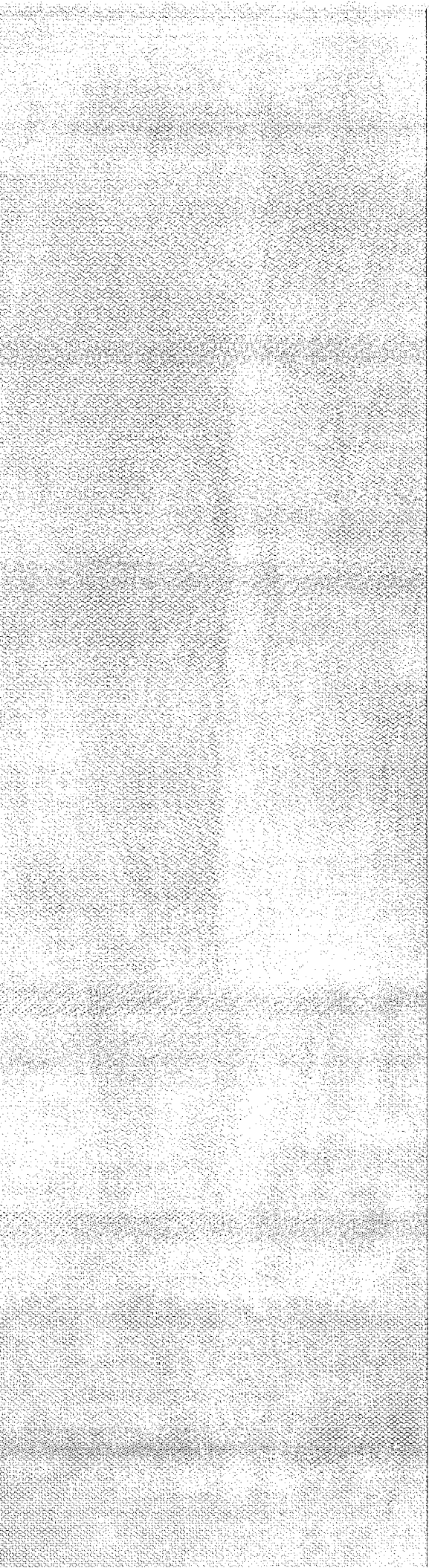
PEAK 15 MINUTES: 11:45 AM
TO
12:00 PM

PEAK HOUR PED
CROSSING VOLUMES



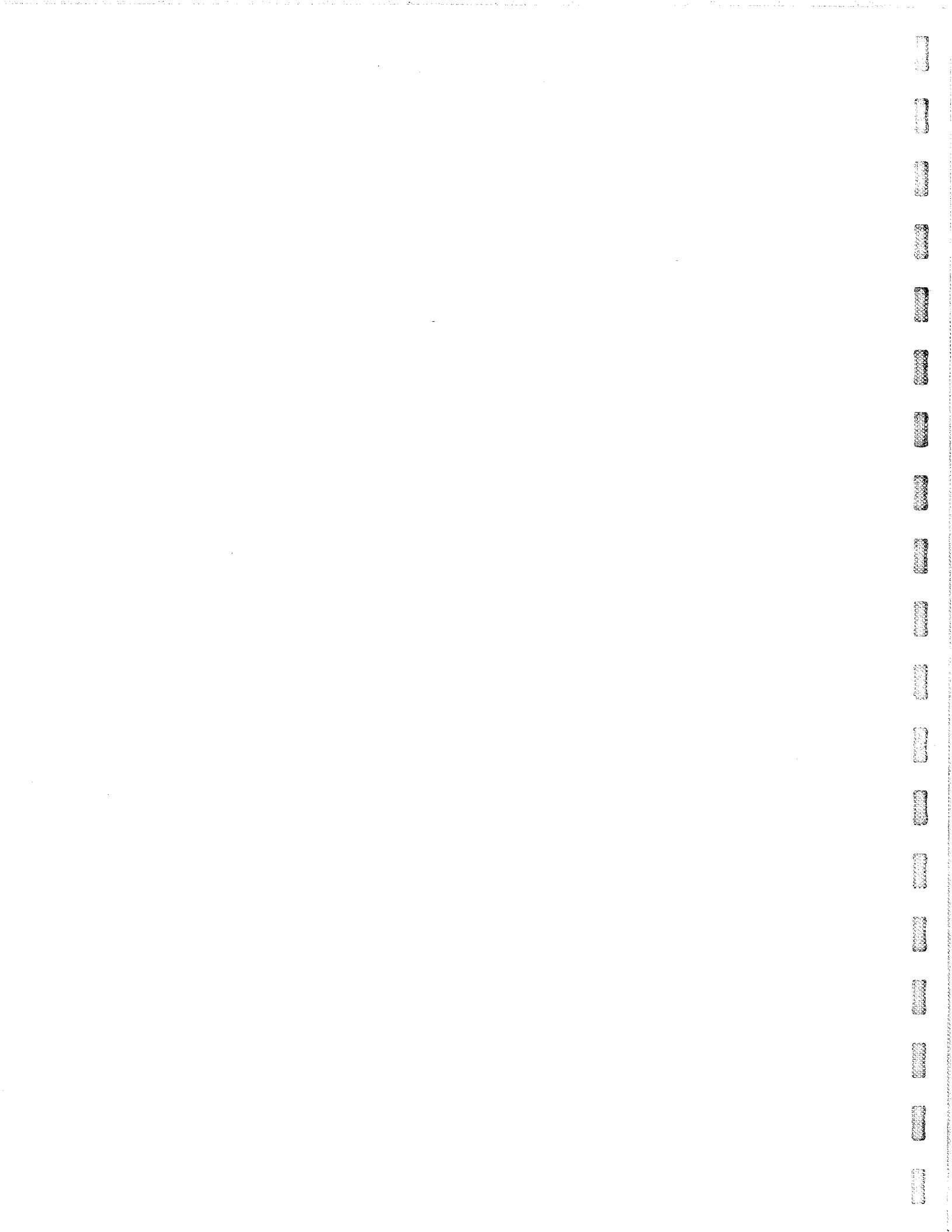
5-MINUTE COUNT PERIOD BEGINNING AT	N 10th Ave--From North (Southbound)			Trees--From East (Westbound)			N 10th Ave--From South (Northbound)			N Holladay St--From West (Eastbound)			Crosswalk Usage (Peds By Approach)				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	2	8	0	0	0	0	0	4	1	2	0	1	0	0	0	0	18	0
11:05 AM	1	9	0	0	0	0	0	7	0	1	0	3	0	0	0	1	21	1
11:10 AM	0	1	0	0	0	0	0	8	0	3	0	1	0	0	0	0	13	0
11:15 AM	1	6	0	0	0	0	0	3	0	0	0	1	0	0	0	3	11	3
11:20 AM	1	2	0	0	0	0	0	2	2	3	0	1	0	0	0	0	11	0
11:25 AM	3	3	0	0	0	0	0	5	0	0	0	0	0	0	0	1	11	1
11:30 AM	1	5	0	0	0	0	0	4	1	1	0	0	0	0	0	1	12	1
11:35 AM	1	4	0	0	0	0	0	7	1	2	0	3	0	0	0	0	18	0
11:40 AM	2	4	0	0	0	0	0	8	2	3	0	4	0	0	0	0	23	0
11:45 AM	0	8	0	0	0	0	0	12	1	1	0	1	0	0	0	0	23	0
11:50 AM	1	9	0	0	0	0	0	9	2	1	0	2	0	0	0	0	24	0
11:55 AM	2	9	0	0	0	0	0	12	1	3	0	2	0	0	0	0	29	0
12:00 PM	1	7	0	0	0	0	0	10	1	1	0	1	0	0	0	0	21	0
12:05 PM	2	5	0	0	0	0	0	8	1	1	0	1	0	0	0	0	18	0
12:10 PM	1	2	0	0	0	0	0	10	3	3	0	2	0	0	0	0	21	0
12:15 PM	0	3	0	0	0	0	0	7	1	2	0	0	0	0	0	0	13	0
12:20 PM	4	10	0	0	0	0	0	9	1	2	0	2	0	0	0	0	28	0
12:25 PM	3	4	0	0	0	0	0	6	3	3	0	1	0	0	0	0	20	0
12:30 PM	1	2	0	0	0	0	0	5	2	2	0	2	0	0	0	0	14	0
12:35 PM	1	9	0	0	0	0	0	4	0	1	0	1	0	0	0	0	16	0
12:40 PM	1	11	0	0	0	0	0	7	1	0	0	1	0	0	0	0	21	0
12:45 PM	1	2	0	0	0	0	0	9	6	1	0	3	0	0	0	0	22	0
12:50 PM	0	15	0	0	0	0	0	12	0	0	0	2	0	0	0	0	29	0
12:55 PM	2	6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	9	0
HOURLY TOTALS	Southbound			Westbound			Northbound			Eastbound			Pedestrians By Approach				TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	North	East	South	West	Veh	Peds
11:00 AM	15	68	0	0	0	0	0	81	11	20	0	19	0	0	0	6	214	6
11:15 AM	16	64	0	0	0	0	0	90	15	19	0	18	0	0	0	5	222	5
11:30 AM	18	70	0	0	0	0	0	102	18	23	0	19	0	0	0	1	250	1
11:45 AM	17	79	0	0	0	0	0	99	17	20	0	16	0	0	0	0	248	0
12:00 PM	17	76	0	0	0	0	0	88	19	16	0	16	0	0	0	0	232	0





Appendix C

Description of Level-of- Service Methods and Criteria



Appendix C

Level of Service Concept

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from A to F.¹

Signalized Intersections

The six level of service grades are described qualitatively for signalized intersections in Table C1. Additionally, Table C2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, level of service D is generally considered to represent the minimum acceptable design standard.

Table C1
Level of Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

¹ Most of the material in this appendix is adapted from the Transportation Research Board, *Highway Capacity Manual*, (2000).

Table C2
Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Unsignalized Intersections

Unsignalized intersections include two way stop controlled (TWSC) and all way stop controlled (AWSC) intersections. The 2000 Highway Capacity Manual provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table C3. A quantitative definition of level of service for unsignalized intersections is presented in Table C4. Using this definition, level of service E is generally considered to represent the minimum acceptable design standard.

Table C3
Level of Service Criteria for Unsignalized Intersections

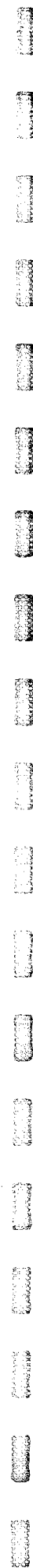
Level of Service	Average Delay per Vehicle to Minor Street
A	<ul style="list-style-type: none"> Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in queue.
B	<ul style="list-style-type: none"> Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in queue.
C	<ul style="list-style-type: none"> Many times there is more than one vehicle in queue. Most drivers feel restricted, but not objectionably so.
D	<ul style="list-style-type: none"> Often there is more than one vehicle in queue. Drivers feel quite restricted.
E	<ul style="list-style-type: none"> Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in queue. Drivers find the delays approaching intolerable levels.
F	<ul style="list-style-type: none"> Forced flow. Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

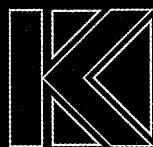
Table C4
Level of Service Criteria for Unsignalized Intersections

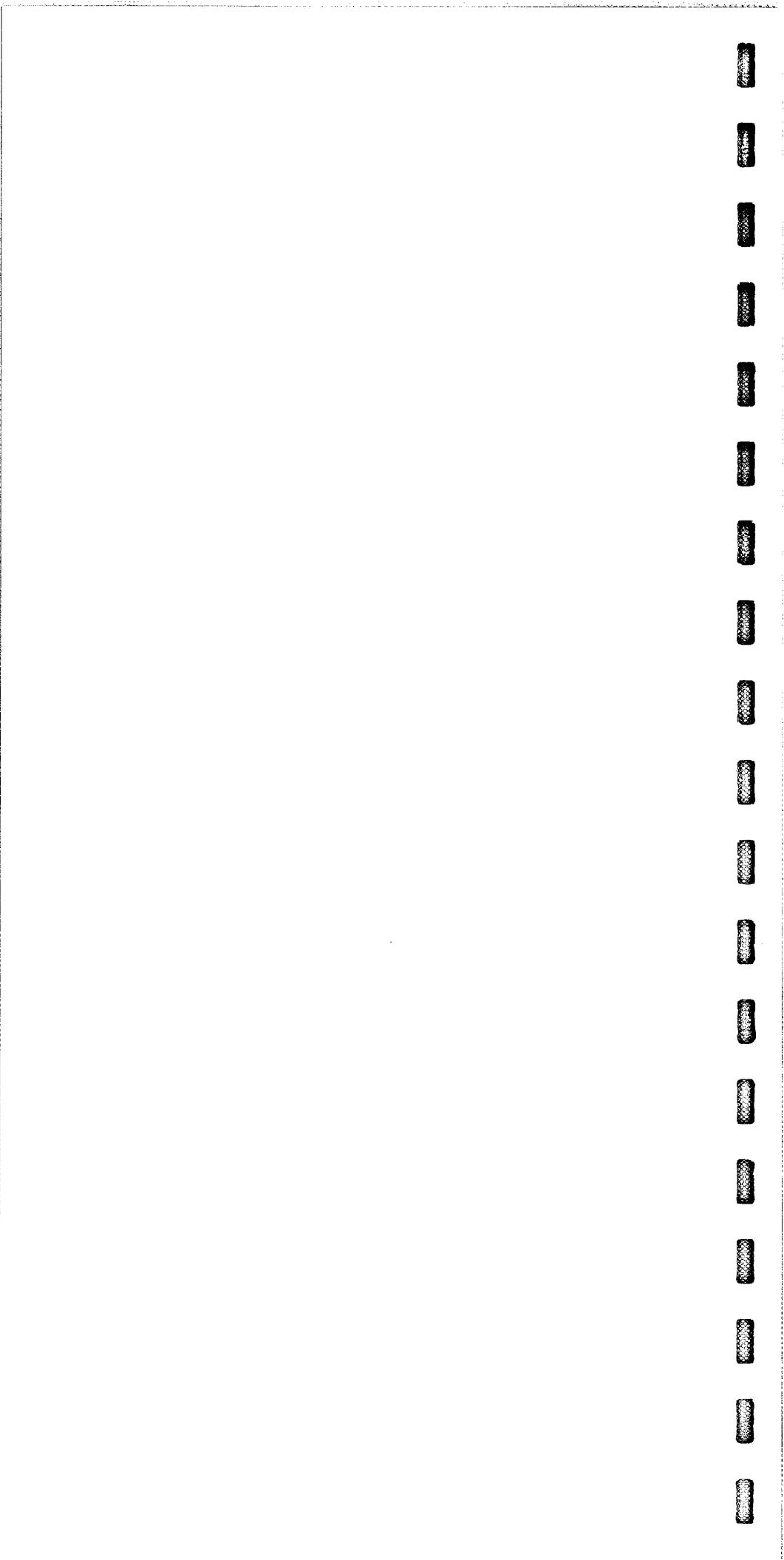
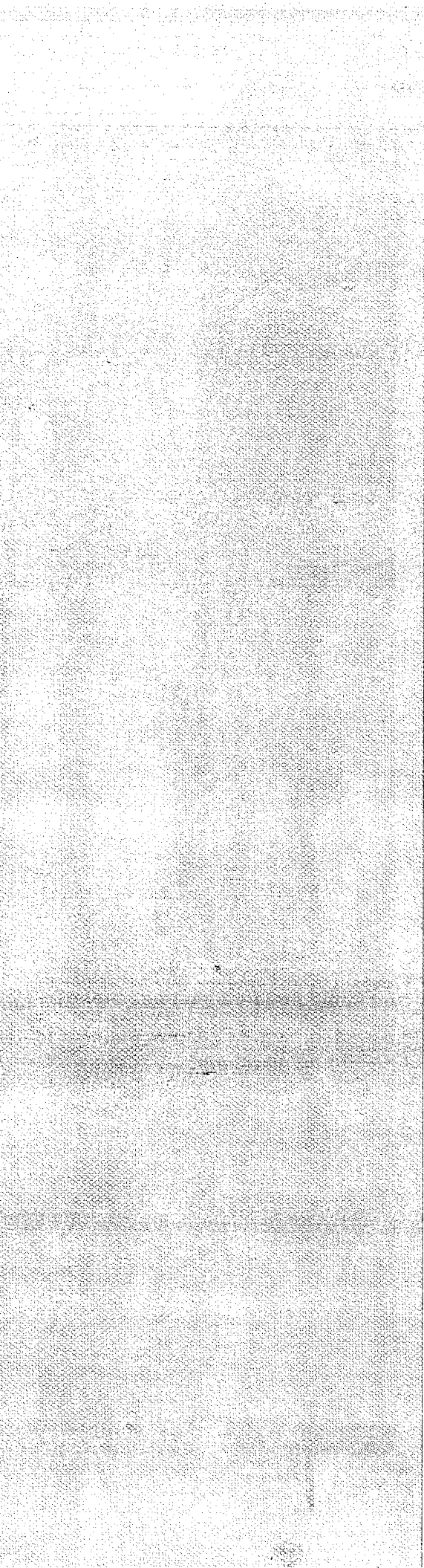
Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level of service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level-of-service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOE's) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.







Appendix D

Existing Conditions Level- of-Service Worksheets

Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wat-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday AM Peak Hour

Scenario Report

Scenario: exam
 Command: exam
 Volume: exam
 Geometry: existing AM
 Impact Fee: Default Impact Fee
 Trip Generation: null
 Trip Distribution: null
 Paths: Default Paths
 Routes: Default Routes
 Configuration: exam

Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wat-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday AM Peak Hour

Impact Analysis Report
 Level Of Service

Intersection	LOS	Del/Veh	Base V/C	LOS	Del/Veh	Future V/C	Change in
# 1 Pacific Ave/Mountain View Ln	B	14.1	0.684	B	14.1	0.684	+ 0.000 D/V
# 2 W Baseline St/4th Ave	B	10.0	0.599	B	10.0	0.599	+ 0.000 D/V
# 3 W Baseline St/10th Ave	B	12.9	0.651	B	12.9	0.651	+ 0.000 D/V
# 4 N Adair St/4th Ave	A	7.0	0.411	A	7.0	0.411	+ 0.000 D/V
# 5 N Adair St/10th Ave	B	11.1	0.424	B	11.1	0.424	+ 0.000 D/V
# 6 N Holladay St/10th Ave	B	10.6	0.000	B	10.6	0.000	+ 0.000 D/V
# 11 Pacific Ave/Quince St	C	32.9	0.675	C	32.9	0.675	+ 0.000 D/V
# 15 W Baseline St/N Yew St	C	22.3	0.000	C	22.3	0.000	+ 0.000 D/V
# 24 N Adair St/N Yew St	C	23.6	0.000	C	23.6	0.000	+ 0.000 D/V
# 52 S 4th Ave/S Heather St	A	7.3	0.046	A	7.3	0.046	+ 0.000 V/C
# 53 S 10th Ave/Dogwood St	B	11.2	0.000	B	11.2	0.000	+ 0.000 D/V

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 W Baseline St/4th Ave
Cycle (sec): 70 Critical Vol./Cap. (X): 0.599
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 10.0
Optimal Cycle: 37 Level Of Service: B

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Permitted	Permitted	Permitted	Permitted
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Lanes:	0 0 1 0 1	1 0 1 0 0	0 1 1 0 1	0 0 0 0 0

Volume Module:	0 73 103 38 43	0 13 1156 79 0	0 0 0 0	0 0 0 0
Base Vol:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Growth Adj:	0 73 103 38 43	0 13 1156 79 0	0 0 0 0	0 0 0 0
Initial Bse:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
User Adj:	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88
PHF Adj:	0 83 117 43 49	0 15 1314 90 0	0 0 0 0	0 0 0 0
PHF Volume:	0 83 117 43 49	0 15 1314 90 0	0 0 0 0	0 0 0 0
Reduced Vol:	0 83 117 43 49	0 15 1314 90 0	0 0 0 0	0 0 0 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Final Vol.:	0 83 117 43 49	0 15 1314 90 0	0 0 0 0	0 0 0 0

Saturation Flow Module:	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900
Sat/Lane:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Adj/Lane:	0.00 0.96 0.81 0.63 0.90	0.00 0.77 0.77 0.81 0.81	0.00 0.02 1.98 1.00 0.00	0.00 0.00 0.00 0.00 0.00
Lanes:	0 1828 1543 1194 1712	0 32 2889 1535 0	0 0 0 0 0	0 0 0 0 0
Final Sat.:	0 0.05 0.08 0.04 0.03	0.00 0.45 0.45 0.06 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00

Capacity Analysis Module:	0.00 0.05 0.08 0.04 0.03	0.00 0.45 0.45 0.06 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Vol/Sat:	0.00 0.05 0.08 0.04 0.03	0.00 0.45 0.45 0.06 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Crit Moves:	0.00 0.13 0.13 0.13 0.13	0.00 0.76 0.76 0.76 0.76	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Green/Cycle:	0.00 0.36 0.60 0.29 0.23	0.00 0.60 0.60 0.08 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Volume/Cap:	0.00 32.2 41.7 32.4 29.9	0.0 4.9 4.9 2.3 0.0	0.0 1.00 1.00 1.00 1.00	0.0 1.00 1.00 1.00 1.00
Delay/Veh:	0.0 32.2 41.7 32.4 29.9	0.0 4.9 4.9 2.3 0.0	0.0 1.00 1.00 1.00 1.00	0.0 1.00 1.00 1.00 1.00
User DelAdj:	0.0 32.2 41.7 32.4 29.9	0.0 4.9 4.9 2.3 0.0	0.0 1.00 1.00 1.00 1.00	0.0 1.00 1.00 1.00 1.00
AdjDel/Veh:	0.0 32.2 41.7 32.4 29.9	0.0 4.9 4.9 2.3 0.0	0.0 1.00 1.00 1.00 1.00	0.0 1.00 1.00 1.00 1.00
HCM2KAVG:	0 2 3 1 1	0 8 8 1 0	0 0 0 0 0	0 0 0 0 0

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Pacific Ave/Mountain View Ln
Cycle (sec): 100 Critical Vol./Cap. (X): 0.684
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 14.1
Optimal Cycle: 57 Level Of Service: B

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Split Phase	Split Phase	Protected	Protected
Rights:	Include	Include	Include	Include
Min. Green:	0 0 0 0	0 0 0 0	0 0 1 0	1 0 2 0 0
Lanes:	1 0 0 0 1	0 0 0 0 0	0 0 1 1 0	1 0 2 0 0

Volume Module:	114 0 118 0 0	0 0 1135 141 79	786 0 0 0 0	0 0 0 0
Base Vol:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Growth Adj:	114 0 118 0 0	0 0 1135 141 79	786 0 0 0 0	0 0 0 0
Initial Bse:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
User Adj:	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84
PHF Adj:	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84	0.84 0.84 0.84 0.84 0.84
PHF Volume:	136 0 140 0 0	0 0 1351 168 94	936 0 0 0 0	0 0 0 0
Reduced Vol:	136 0 140 0 0	0 0 1351 168 94	936 0 0 0 0	0 0 0 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Final Vol.:	136 0 140 0 0	0 0 1351 168 94	936 0 0 0 0	0 0 0 0

Saturation Flow Module:	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900	1900 1900 1900 1900 1900
Sat/Lane:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
Adj/Lane:	0.90 1.00 0.81 1.00 0.88	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88
Lanes:	1.00 0.00 1.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Final Sat.:	1718 0 1537 0 0	0 0 2977 370 1671	3343 0 0 0 0	0 0 0 0 0

Capacity Analysis Module:	0.08 0.00 0.09 0.00 0.00	0.00 0.00 0.00 0.45 0.45	0.06 0.28 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Vol/Sat:	0.08 0.00 0.09 0.00 0.00	0.00 0.00 0.00 0.45 0.45	0.06 0.28 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Crit Moves:	0.13 0.00 0.13 0.00 0.00	0.00 0.66 0.66 0.66 0.66	0.08 0.75 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Green/Cycle:	0.59 0.00 0.68 0.00 0.00	0.00 0.68 0.68 0.68 0.68	0.68 0.38 0.00 0.00	0.00 0.00 0.00 0.00 0.00
Volume/Cap:	44.8 0.0 50.4 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 11.2 57.9 4.6 0.0	0.0 0.0 0.0 0.0 0.0
Delay/Veh:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
User DelAdj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:	44.8 0.0 50.4 0.0 0.0	0.0 0.0 0.0 0.0 0.0	0.0 11.2 57.9 4.6 0.0	0.0 0.0 0.0 0.0 0.0
HCM2KAVG:	5 5 5 0 0	0 0 0 15 15	4 5 0 0 0	0 0 0 0 0

exam Tue Aug 23, 2005 14:20:56 Page 6-1

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 N Adair St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.411
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 7.0
Optimal Cycle: 27 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 1 0

Volume Module:

Base Vol: 67 26 0 0 14 15 0 0 0 69 831 10
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 67 26 0 0 14 15 0 0 0 69 831 10
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume: 75 29 0 0 16 17 0 0 0 78 934 11
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 75 29 0 0 16 17 0 0 0 78 934 11

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.70 0.95 1.00 1.00 0.83 0.82 1.00 1.00 1.00 0.88 0.88 0.88
Lanes: 1.00 1.00 0.00 0.00 0.68 0.52 0.00 0.00 0.00 0.15 1.83 0.02
Final Sat: 1321 1809 0 0 759 813 0 0 0 252 3040 37

Capacity Analysis Module:

Vol/Sat: 0.06 0.02 0.00 0.00 0.02 0.02 0.00 0.00 0.00 0.31 0.31 0.31
Crit Moves: ****
Green/Cycle: 0.14 0.14 0.00 0.00 0.14 0.14 0.00 0.00 0.00 0.75 0.75 0.75
Volume/Cap: 0.41 0.12 0.00 0.00 0.15 0.15 0.00 0.00 0.00 0.41 0.41 0.41
Delay/Veh: 34.2 27.3 0.0 0.0 28.0 28.0 0.0 0.0 0.0 3.7 3.7 3.7
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 34.2 27.3 0.0 0.0 28.0 28.0 0.0 0.0 0.0 3.7 3.7 3.7
HCM2KAVG: 2 1 0 0 1 1 0 0 0 4 4 4

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exam Tue Aug 23, 2005 14:20:56 Page 5-1

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 W Baseline St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.651
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 12.9
Optimal Cycle: 41 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0 0 0 0

Volume Module:

Base Vol: 0 100 128 64 94 0 72 1174 42 0 0 0 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 100 128 64 94 0 72 1174 42 0 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume: 0 112 144 72 106 0 81 1319 47 0 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 0 112 144 72 106 0 81 1319 47 0 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.00 0.92 0.78 0.64 0.94 1.00 0.77 0.77 0.80 1.00 1.00 1.00
Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.12 1.88 1.00 0.00 0.00 0.00
Final Sat: 0 1742 1478 1218 1792 0 169 2752 1528 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.06 0.10 0.06 0.06 0.00 0.48 0.48 0.03 0.00 0.00 0.00
Crit Moves: ****
Green/Cycle: 0.00 0.15 0.15 0.15 0.15 0.00 0.74 0.74 0.74 0.00 0.00 0.00
Volume/Cap: 0.00 0.43 0.65 0.39 0.39 0.00 0.65 0.65 0.04 0.00 0.00 0.00
Delay/Veh: 0.0 32.2 42.0 33.2 31.2 0.0 6.2 6.2 2.6 0.0 0.0 0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 0.0 32.2 42.0 33.2 31.2 0.0 6.2 6.2 2.6 0.0 0.0 0.0
HCM2KAVG: 0 3 4 2 2 0 10 10 0 0 0 0

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exam	Tue Aug 23, 2005 14:20:56	Page 7-1
<p>Kittelson & Associates, Inc. -- Project # 7059 Cornelius Wal-Mart -- Cornelius, Oregon Existing Traffic Conditions -- Weekday AM Peak Hour</p>		
<p>Level of Service Computation Report 2000 HCM Operations Method (Base Volume Alternative)</p>		
<p>***** Intersection #5 N Adair St/10th Ave *****</p>		
Cycle (sec):	70	Critical Vol./Cap. (X): 0.424
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh): 11.1
Optimal Cycle:	28	Level Of Service: B
<p>***** Approach: North Bound South Bound East Bound West Bound Movement: L T R L T R L T R L T R L T R L T R L T R L T R *****</p>		
Control:	Permitted Include	Permitted Include
Rights:	0 0 0	0 0 0
Min. Green:	1 0 1 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes:	1 0 1 0 0	0 0 1 0 1 0 0 0 0 0 0 0 1 0 1 0 1 0 0
<p>Volume Module:</p>		
Base Vol:	79 89 0	0 93 58 0 0 0 0 60 802 44
Growth Adj:	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse:	79 89 0	0 93 58 0 0 0 0 60 802 44
User Adj:	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj:	0.91 0.91 0.91	0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91
PHF Volume:	87 98 0	0 102 64 0 0 0 0 66 881 48
Reduct Vol:	0 0 0	0 0 0 0 0 0 0 0 0
Reduced Vol:	87 98 0	0 102 64 0 0 0 0 66 881 48
PCE Adj:	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.:	87 98 0	0 102 64 0 0 0 0 66 881 48
<p>Saturation Flow Module:</p>		
Sat/Lane:	1900 1900	1900 1900 1900 1900 1900 1900
Adjustment:	0.60 0.89	1.00 0.90 0.75 1.00 1.00 1.00 0.88 0.88 0.88
Lanes:	1.00 1.00	0.00 1.00 1.00 0.00 0.00 0.00 0.13 1.77 0.10
Final Sat.:	1142 1682	0 0 1712 1433 0 0 0 220 2946 162
<p>Capacity Analysis Module:</p>		
Vol/Sat:	0.08 0.06	0.00 0.06 0.04 0.00 0.00 0.00 0.30 0.30 0.30
Crit Moves:	****	****
Green/Cycle:	0.18 0.18	0.00 0.18 0.18 0.00 0.00 0.00 0.71 0.71 0.71
Volume/Cap:	0.42 0.32	0.00 0.33 0.25 0.00 0.00 0.00 0.42 0.42 0.42
Delay/Veh:	31.8 27.9	0.0 0.0 28.0 26.9 0.0 0.0 4.9 4.9 4.9
User DelAdj:	1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:	31.8 27.9	0.0 0.0 28.0 26.9 0.0 0.0 4.9 4.9 4.9
HC2kAgg:	3 2 0 0 2 1	0 0 0 0 5 5
<p>*****</p>		

Tue Aug 23, 2005 14:20:56		Project # 7059		Page 8-1	
Kittelson & Associates, Inc. -- Cornelius, Oregon					
Existing Traffic Conditions -- Weekday AM Peak Hour					
Level Of Service Computation Report					
2000 HCM Unsignalized Method (Base Volume Alternative)					

Intersection #6 N Holladay St/10th Ave					

Average Delay (sec/veh):		2.9 Worst Case Level of Service:		Bf 10.61	

Approach:		North Bound		South Bound	
Movement:		L - T - R		L - T - R	
Control:		Uncontrolled		Uncontrolled	
Rights:		Include		Include	
Lanes:		0 1 0 0 0		0 0 0 1 0	
Volume Module:		Base Vol:		34 84 0 0 84 32 40 0 16 0 0 0	
Growth Adj:		1.00 1.00 1.00		1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	
Initial Bse:		34 84 0 0 84 32 40 0 16 0 0 0		34 84 0 0 84 32 40 0 16 0 0 0	
User Adj:		1.00 1.00 1.00		1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	
PHF Adj:		0.93 0.93 0.93		0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	
PHF Volume:		37 90 0 0 90 34 43 0 17 0 0 0		37 90 0 0 90 34 43 0 17 0 0 0	
Reduct Vol:		0 0 0 0 0 0 0 0 0 0 0 0		0 0 0 0 0 0 0 0 0 0 0 0	
Final Vol:		37 90 0 0 90 34 43 0 17 0 0 0		37 90 0 0 90 34 43 0 17 0 0 0	
Critical Gap Module:					
Critical Gp:		4.2 xxxx xxxx		6.7 xxxx 6.5 xxxx xxxx xxxx	
FollowUpTm:		2.3 xxxx xxxx		3.7 xxxx 3.5 xxxx xxxx xxxx	
Capacity Module:					
Conflict Vol:		129 xxxx xxxx		275 xxxx 112 xxxx xxxx xxxx	
Potent Cap:		1433 xxxx xxxx		666 xxxx 880 xxxx xxxx xxxx	
Move Cap:		1428 xxxx xxxx		651 xxxx 877 xxxx xxxx xxxx	
Volume/Cap:		0.03 xxxx xxxx		0.07 xxxx 0.02 xxxx xxxx xxxx	
Level Of Service Module:					
Queue:		0.1 xxxx xxxx		xxxxx xxxx xxxx xxxx xxxx xxxx	
Stopped Del:		7.6 xxxx xxxx		xxxxx xxxx xxxx xxxx xxxx xxxx	
LOS by Move:		A *		* * * * *	
Movement:		LT - LTR - RT		LT - LTR - RT LT - LTR - RT	
Shared Cap:		xxxx xxxx xxxx		xxxx xxxx xxxx xxxx xxxx xxxx	
Shared Queue:		0.1 xxxx xxxx		xxxxx 0.3 xxxx xxxx xxxx xxxx xxxx	
Shrd StpDel:		7.6 xxxx xxxx		xxxxx 10.6 xxxx xxxx xxxx xxxx xxxx	
Shared LOS:		A *		* B * * *	
ApproachDel:		xxxxxx		xxxxxx	
ApproachLOS:		*		B	

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.675
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 32.9
Optimal Cycle: 66 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected

Rights: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 2 0 1

Volume Module: 29 188 301 136 150 66 76 554 12 190 393 52

Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 29 188 301 136 150 66 76 554 12 190 393 52

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85

PHF Volume: 34 221 354 160 176 78 89 652 14 224 462 61

Reduced Vol: 34 221 354 160 176 78 89 652 14 224 462 61

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 34 221 354 160 176 78 89 652 14 224 462 61

Saturation Flow Module: 1900 1900 1900 1900 1900 1900 1900 1900

Sat/Lane: 0.84 0.89 0.75 0.80 0.81 0.81 0.90 0.90 0.90 0.86 0.86 0.77

Adjustment: 1.00 1.00 1.00 1.00 0.69 0.31 1.00 1.96 0.04 1.00 2.00 1.00

Lanes: 1597 1682 1429 1529 1066 469 1718 3354 73 1641 3281 1468

Final Sat: 1597 1682 1429 1529 1066 469 1718 3354 73 1641 3281 1468

Capacity Analysis Module: 0.02 0.13 0.25 0.10 0.17 0.17 0.05 0.19 0.19 0.14 0.14 0.04

Vol/Sat: 0.02 0.13 0.25 0.10 0.17 0.17 0.05 0.19 0.19 0.14 0.14 0.04

Crit Moves: 0.04 0.19 0.40 0.16 0.31 0.31 0.13 0.29 0.00 0.20 0.36 0.36

Green/Cycle: 0.53 0.67 0.62 0.67 0.53 0.53 0.39 0.67 0.00 0.67 0.39 0.12

Volume/Cap: 55.6 42.8 26.4 47.3 29.7 29.7 40.9 33.3 0.0 42.3 24.2 21.6

Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User DelAdj: 55.6 42.8 26.4 47.3 29.7 29.7 40.9 33.3 0.0 42.3 24.2 21.6

AdjDel/Veh: 55.6 42.8 26.4 47.3 29.7 29.7 40.9 33.3 0.0 42.3 24.2 21.6

HCM2Kavg: 2.8 9 6 7 3 10 52 8 5 1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #15 W Baseline St/N Yew St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C [22.3]
Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign

Rights: 0 0 1 0 0 1 0 0 0 1 0 1 0 0 0 0 0

Lanes: 0 0 1 0 0 1 0 0 0 1 0 1 0 0 0 0 0

Volume Module: 0 7 14 27 3 0 37 1204 12 0 0 0

Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 7 14 27 3 0 37 1204 12 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88

PHF Volume: 0 8 16 31 3 0 42 1368 14 0 0 0

Reduced Vol: 0 8 16 31 3 0 42 1368 14 0 0 0

Final Vol: 0 8 16 31 3 0 42 1368 14 0 0 0

Critical Gap Module: 6.6 6.3 7.2 6.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

Critical Gap: 6.6 6.3 7.2 6.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

FollowUpTim: 4.0 3.3 3.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

Capacity Module: 691 1459 691 772 1466 691 772 1466 691 772 1466 691

Conflict Vol: 1459 691 772 1466 691 772 1466 691 772 1466 691 772

Potent Cap: 127 439 310 125 439 310 125 439 310 125 439 310

Move Cap: 121 439 274 119 439 274 119 439 274 119 439 274

Volume/Cap: 0.07 0.04 0.11 0.03 0.04 0.11 0.03 0.04 0.11 0.03 0.04 0.11

Level Of Service Module: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Stopped Del: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

LOS by Move: A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 234 242 242 242 242 242 242 242 242 242 242 242

SharedQueue: 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3

Shrd StpDel: 22.1 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3

Shared LOS: C C C C C C C C C C C C

ApproachDel: 22.1 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3 22.3

ApproachLOS: C C C C C C C C C C C C

exam Tue Aug 23, 2005 14:20:56 Page 12-1
Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour
Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)
Intersection #2 S 4th Ave/S Heather St
Cycle (sec): 100 Critical Vol./Cap. (X): 0.046
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 7.3
Optimal Cycle: 0 Level Of Service: A
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0
Volume Module:
Base Vol: 8 27 1 8 11 10 15 8 6 1 8 7
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 8 27 1 8 11 10 15 8 6 1 8 7
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
PHF Volume: 9 29 1 9 12 11 16 9 7 1 9 8
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 9 29 1 9 12 11 16 9 7 1 9 8
Saturation Flow Module:
Adj Sat: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Adj Sat: 0.22 0.75 0.03 0.28 0.38 0.34 0.52 0.27 0.21 0.06 0.50 0.44
Lanes: 188 634 23 245 336 306 441 235 176 54 435 381
Capacity Analysis Module:
Vol/Sat: 0.05 0.05 0.05 0.04 0.04 0.04 0.04 0.04 0.02 0.02 0.02 0.02
Crit Moves: ****
Delay/Veh: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.1 7.1 7.1
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Adj Del/Veh: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.1 7.1 7.1
LOS by Move: A A A A A A A A A A A A
Approach Del: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.1 7.1 7.1
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Approach Del: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.1 7.1 7.1
LOS by Appr: A A A A A A A A A A A A

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exam Tue Aug 23, 2005 14:20:56 Page 11-1
Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday AM Peak Hour
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)
Intersection #24 N Adair St/N Yew St
Average Delay (sec/veh): 2.0 Worst Case Level Of Service: C (23.6)
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 1 0
Volume Module:
Base Vol: 15 18 0 0 28 8 0 0 0 0 43 853 17
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 15 18 0 0 28 8 0 0 0 0 43 853 17
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86
PHF Volume: 17 21 0 0 33 9 0 0 0 0 50 992 20
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol.: 17 21 0 0 33 9 0 0 0 0 50 992 20
Critical Gap Module:
Critical Gap: 7.2 6.6 xxxxx 6.5 6.2 xxxxx xxxxx 4.1 xxxxx xxxxx
Followup Gap: 3.5 4.0 xxxxx 4.0 3.3 xxxxx xxxxx 2.2 xxxxx xxxxx
Capacity Module:
Conflict Vol: 612 1112 xxxxx 506 xxxxx xxxxx 0 xxxxx xxxxx
Potential Cap: 401 206 xxxxx 571 xxxxx xxxxx 900 xxxxx xxxxx
Move Cap: 330 194 xxxxx 571 xxxxx xxxxx 900 xxxxx xxxxx
Volume/Cap: 0.05 0.11 xxxxx 0.16 0.02 xxxxx xxxxx 0.06 xxxxx xxxxx
Level Of Service Module:
Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.2 xxxxx xxxxx
Stopped Del: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 9.2 xxxxx xxxxx
LOS by Move: * * * * * A * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap: 239 xxxxx xxxxx 235 xxxxx xxxxx xxxxx 0.2 xxxxx xxxxx
Shared Queue: 0.6 xxxxx xxxxx xxxxx 0.6 xxxxx xxxxx xxxxx 0.2 xxxxx xxxxx
Shrd StpDel: 22.9 xxxxx xxxxx xxxxx 23.6 xxxxx xxxxx xxxxx 9.2 xxxxx xxxxx
Shared LOS: C * * * * * C * * * * *
Approach Del: 22.9 C 23.6 C xxxxxx * * * * *
Approach LOS: C C C C C C C C C C C C

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exam Tue Aug 23, 2005 14:20:56 Page 13-1

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #53 S 10th Ave/Dogwood St

Average Delay (sec/veh): 1.9 Worst Case Level of Service: B[11.2]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0

Volume Module:

Base Vol: 2 147 11 3 104 4 15 9 4 5 15 2

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 2 147 11 3 104 4 15 9 4 5 15 2

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87

PHF Volume: 2 169 13 3 120 5 17 10 5 6 17 2

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 2 169 13 3 120 5 17 10 5 6 17 2

Critical Gap Module:

Critical Gap: 4.2 xxxx xxxx 4.3 xxxx xxxx 7.1 6.5 6.2 7.1 6.5 6.2

FollowUpTim: 2.3 xxxx xxxx 2.4 xxxx xxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:

Conflict Vol: 135 xxxx xxxx 188 xxxx xxxx 336 332 134 323 328 188

Potent Cap: 1384 xxxx xxxx 1296 xxxx xxxx 621 591 921 634 594 859

Move Cap: 1371 xxxx xxxx 1290 xxxx xxxx 594 580 911 616 583 850

Volume/Cap: 0.00 xxxx xxxx 0.00 xxxx xxxx 0.03 0.02 0.01 0.01 0.03 0.00

Level Of Service Module:

Queue: 0.0 xxxx xxxx 0.0 xxxx xxxx xxxx xxxx xxxx xxxx

Stopped Del: 7.6 xxxx xxxx 7.8 xxxx xxxx xxxx xxxx xxxx

LOS by Move: A * A * A * A * A * A *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: xxxx xxxx xxxx xxxx xxxx 620 xxxx 608 xxxx

Shared Queue: xxxx xxxx xxxx xxxx xxxx 0.2 xxxx 0.1 xxxx

Shrd StpDel: xxxx xxxx xxxx xxxx xxxx 11.1 xxxx 11.2 xxxx

Shared LOS: * * * * * B B

ApproachDel: xxxxxx 11.1 11.2

ApproachLOS: B B

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday PM Peak Hour

Scenario Report

Scenario: expm
 Command: expm
 Volume: expm
 Geometry: expm
 Impact Fee: Default Impact Fee
 Trip Generation: null
 Trip Distribution: null
 Paths: Default Paths
 Routes: Default Routes
 Configuration: expm

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday PM Peak Hour

Impact Analysis Report
 Level Of Service

Intersection	Base Del/V/ LOS Veh C	Future Del/V/ LOS Veh C	Change in
# 1 Pacific Ave/Mountain View Ln	B 12.1 0.642	B 12.1 0.642	+ 0.000 D/V
# 2 W Baseline St/4th Ave	B 10.8 0.646	B 10.8 0.646	+ 0.000 D/V
# 3 W Baseline St/10th Ave	B 13.9 0.680	B 13.9 0.680	+ 0.000 D/V
# 4 N Adair St/4th Ave	A 7.9 0.662	A 7.9 0.662	+ 0.000 D/V
# 5 N Adair St/10th Ave	B 13.4 0.713	B 13.4 0.713	+ 0.000 D/V
# 6 N Holladay St/10th Ave	B 10.8 0.000	B 10.8 0.000	+ 0.000 D/V
# 11 Pacific Ave/Quince St	D 35.9 0.846	D 35.9 0.846	+ 0.000 D/V
# 15 W Baseline St/N Yew St	F 52.1 0.000	F 52.1 0.000	+ 0.000 D/V
# 24 N Adair St/N Yew St	F OVRFL 0.000	F OVRFL 0.000	+ 0.000 D/V
# 52 S 4th Ave/S Heather St	A 7.4 0.106	A 7.4 0.106	+ 0.000 V/C
# 53 S 10th Ave/Dogwood St	B 12.4 0.000	B 12.4 0.000	+ 0.000 D/V

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Pacific Ave/Mountain View Ln
Cycle (sec): 100 Critical Vol./Cap. (X): 0.642
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 12.1
Optimal Cycle: 52 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Split Phase Split Phase Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 0 0 1 0 0 0 0 0 1 0 1 0 2 0 0

Volume Module:
Base Vol: 126 0 82 0 0 0 1304 94 118 1565 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 126 0 82 0 0 0 1304 94 118 1565 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 133 0 86 0 0 0 1373 99 124 1647 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 133 0 86 0 0 0 1373 99 124 1647 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj: 0.94 1.00 0.84 1.00 1.00 1.00 0.92 0.92 0.92 0.92 0.92
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.87 1.00 2.00 2.00 0.00
Final Sat: 1787 0 1599 0 0 0 3267 235 1753 3505 0

Capacity Analysis Module:
Vol/Sat: 0.07 0.00 0.05 0.00 0.00 0.00 0.42 0.42 0.07 0.47 0.00
Crit Moves: ****
Green/Cycle: 0.12 0.00 0.12 0.00 0.00 0.00 0.65 0.65 0.11 0.76 0.00
Volume/Cap: 0.64 0.00 0.47 0.00 0.00 0.00 0.64 0.64 0.64 0.61 0.00
Delay/Veh: 49.0 0.0 43.2 0.0 0.0 0.0 10.9 10.9 49.8 5.7 0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 49.0 0.0 43.2 0.0 0.0 0.0 10.9 10.9 49.8 5.7 0.0
HCM2kAvg: 5 0 3 0 0 0 14 14 5 12 0

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 W Baseline St/4th Ave
Cycle (sec): 70 Critical Vol./Cap. (X): 0.646
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 10.8
Optimal Cycle: 40 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0

Volume Module:
Base Vol: 0 73 75 44 126 0 21 1368 93 0 0 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 73 75 44 126 0 21 1368 93 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93
PHF Volume: 0 78 81 47 135 0 23 1471 100 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 0 78 81 47 135 0 23 1471 100 0 0 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj: 0.84 0.70 1.00 1.00 1.00 1.00 0.78 0.78 0.83 1.00 1.00
Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Sat: 0 1900 1593 1325 1900 0 45 2934 1568 0 0 0

Capacity Analysis Module:
Vol/Sat: 0.00 0.04 0.05 0.04 0.07 0.00 0.50 0.50 0.06 0.00 0.00
Crit Moves: ****
Green/Cycle: 0.00 0.11 0.11 0.11 0.11 0.00 0.78 0.78 0.78 0.00 0.00
Volume/Cap: 0.00 0.37 0.46 0.32 0.65 0.00 0.65 0.65 0.08 0.00 0.00
Delay/Veh: 0.0 34.0 37.6 34.5 44.2 0.0 5.0 5.0 2.0 0.0 0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 0.0 34.0 37.6 34.5 44.2 0.0 5.0 5.0 2.0 0.0 0.0
HCM2kAvg: 0 2 2 2 4 0 9 9 1 0 0

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 W Baseline St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.680
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.9
Optimal Cycle: 43 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 1 1 0 1 0 0 1 1 0 0 0 0

Volume Module:
Base Vol: 0 125 91 93 201 0 94 1337 77 0 0 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 125 91 93 201 0 94 1337 77 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97
PHF Volume: 0 129 94 96 207 0 97 1378 79 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 0 129 94 96 207 0 97 1378 79 0 0 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj/Adjustment: 1.00 0.99 0.84 0.62 0.98 1.00 0.79 0.79 0.83 1.00 1.00 1.00
Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.13 1.87 1.00 0.00 0.00 0.00
Final Sat: 0 1881 1593 1186 1862 0 198 2810 1575 0 0 0

Capacity Analysis Module:
Vol/Sat: 0.00 0.07 0.06 0.08 0.11 0.00 0.49 0.49 0.05 0.00 0.00 0.00
Crit Moves: ****
Green/Cycle: 0.00 0.16 0.16 0.16 0.16 0.00 0.72 0.72 0.72 0.00 0.00 0.00
Volume/Cap: 0.00 0.42 0.36 0.49 0.68 0.00 0.68 0.68 0.07 0.00 0.00 0.00
Delay/Veh: 0.0 30.4 29.8 35.3 39.1 0.0 7.0 7.0 3.0 0.0 0.0 0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 0.0 30.4 29.8 35.3 39.1 0.0 7.0 7.0 3.0 0.0 0.0 0.0
HCM2KAVg: 0 3 2 4 6 0 11 11 1 0 0 0

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 N Adair St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.662
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 7.9
Optimal Cycle: 42 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0

Volume Module:
Base Vol: 72 20 0 0 30 43 0 0 0 0 0 0 144 1607 24
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 72 20 0 0 30 43 0 0 0 0 0 0 144 1607 24
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93
PHF Volume: 77 22 0 0 32 46 0 0 0 0 0 0 155 1728 26
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 77 22 0 0 32 46 0 0 0 0 0 0 155 1728 26

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj/Adjustment: 0.82 1.00 1.00 1.00 0.92 0.91 1.00 1.00 1.00 1.00 1.00 1.00 0.94 0.94 0.94
Lanes: 1.00 1.00 1.00 1.00 0.00 0.41 0.59 0.00 0.00 0.00 0.00 0.00 0.16 1.81 0.03
Final Sat: 1553 1900 0 0 713 1022 0 0 0 0 0 0 289 3223 48

Capacity Analysis Module:
Vol/Sat: 0.05 0.01 0.00 0.00 0.05 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.54 0.54 0.54
Crit Moves: ****
Green/Cycle: 0.08 0.08 0.00 0.00 0.08 0.08 0.00 0.00 0.00 0.00 0.00 0.00 0.81 0.81 0.81
Volume/Cap: 0.66 0.15 0.00 0.00 0.60 0.60 0.00 0.00 0.00 0.00 0.00 0.00 0.66 0.66 0.66
Delay/Veh: 57.2 32.5 0.0 0.0 50.1 50.1 0.0 0.0 0.0 0.0 0.0 0.0 3.9 3.9 3.9
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 57.2 32.5 0.0 0.0 50.1 50.1 0.0 0.0 0.0 0.0 0.0 0.0 3.9 3.9 3.9
HCM2KAVg: 3 1 0 0 3 3 0 0 0 0 0 0 9 9 9

expm Tue Aug 23, 2005 14:21:03 Page 7-1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

***** Intersection #5 N Adair St/10th Ave *****

***** Cycle (sec): 70 Critical Vol./Cap. (X): 0.713 *****

***** Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.4 *****

***** Optimal Cycle: 47 Level Of Service: B *****

***** Approach: North Bound South Bound East Bound West Bound *****

***** Movement: L - T - R L - T - R L - T - R L - T - R *****

***** Control: Permitted Permitted Permitted Permitted Permitted *****

***** Rights: Include Include Include Include Include *****

***** Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 0 1 0 1 0 *****

***** Volume Module: *****

***** Base Vol: 85 129 0 0 147 93 0 0 0 0 144 1628 66 *****

***** Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** Initial Bse: 85 129 0 0 147 93 0 0 0 0 144 1628 66 *****

***** User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** PHF Adj: 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 *****

***** PHF Volume: 89 134 0 0 153 97 0 0 0 0 150 1696 69 *****

***** Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 *****

***** PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** Final Vol: 89 134 0 0 153 97 0 0 0 0 150 1696 69 *****

***** Saturation Flow Module: *****

***** Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 *****

***** Adjustment: 0.51 0.99 1.00 1.00 0.97 0.80 1.00 1.00 1.00 1.00 0.93 0.93 0.93 *****

***** Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.00 0.16 1.77 0.07 *****

***** Final Sat: 977 1881 0 0 1845 1526 0 0 0 0 277 3134 127 *****

***** Capacity Analysis Module: *****

***** Vol/Sat: 0.09 0.07 0.00 0.00 0.08 0.06 0.00 0.00 0.00 0.00 0.54 0.54 0.54 *****

***** Crit Moves: **** *****

***** Green/Cycle: 0.13 0.13 0.00 0.00 0.13 0.13 0.00 0.00 0.00 0.00 0.76 0.76 0.76 *****

***** Volume/Cap: 0.71 0.56 0.00 0.00 0.65 0.50 0.00 0.00 0.00 0.00 0.71 0.71 0.71 *****

***** Delay/Veh: 58.7 38.0 0.0 0.0 42.4 37.4 0.0 0.0 0.0 0.0 6.1 6.1 6.1 *****

***** User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** AdjDel/Veh: 58.7 38.0 0.0 0.0 42.4 37.4 0.0 0.0 0.0 0.0 6.1 6.1 6.1 *****

***** HCM2KAVg: 5 4 3 0 0 0 0 0 0 0 12 12 12 *****

***** HCM2KAVg: *****

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expm Tue Aug 23, 2005 14:21:03 Page 8-1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

***** Intersection #6 N Holladay St/10th Ave *****

***** Average Delay (sec/veh): 2.2 Worst Case Level Of Service: B [10.8] *****

***** Approach: North Bound South Bound East Bound West Bound *****

***** Movement: L - T - R L - T - R L - T - R L - T - R *****

***** Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled *****

***** Rights: Include Include Include Include *****

***** Lanes: 0 1 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0 *****

***** Volume Module: *****

***** Base Vol: 18 95 0 0 124 35 22 0 33 0 0 0 *****

***** Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** Initial Bse: 18 95 0 0 124 35 22 0 33 0 0 0 *****

***** User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 *****

***** PHF Adj: 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 *****

***** PHF Volume: 26 138 0 0 180 51 32 0 48 0 0 0 *****

***** Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 *****

***** Final Vol: 26 138 0 0 180 51 32 0 48 0 0 0 *****

***** Critical Gap Module: *****

***** Critical Gap: 4.1 xxxxx xxxxx xxxxx xxxxx 6.5 xxxxx 6.3 xxxxx xxxxx xxxxx *****

***** Followup Tim: 2.2 xxxxx xxxxx xxxxx xxxxx 3.6 xxxxx 3.4 xxxxx xxxxx xxxxx *****

***** Capacity Module: *****

***** Conflict Vol: 234 xxxxx xxxxx xxxxx xxxxx 399 xxxxx 209 xxxxx xxxxx xxxxx *****

***** Potential Cap: 1321 xxxxx xxxxx xxxxx xxxxx 595 xxxxx 816 xxxxx xxxxx xxxxx *****

***** Move Cap: 1317 xxxxx xxxxx xxxxx xxxxx 584 xxxxx 814 xxxxx xxxxx xxxxx *****

***** Volume/Cap: 0.02 xxxxx xxxxx xxxxx xxxxx 0.05 xxxxx 0.06 xxxxx xxxxx xxxxx *****

***** Level Of Service Module: *****

***** Queue: 0.1 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx *****

***** Stopped Del: 7.8 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx *****

***** LOS by Move: A *****

***** Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT *****

***** Shared Cap: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx *****

***** Shared Queue: 0.1 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx *****

***** Shared Stodel: 7.8 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx *****

***** Shared LOS: A *****

***** ApproachDel: xxxxxx 10.8 B *****

***** ApproachLOS: *****

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expm Tue Aug 23, 2005 14:21:03 Page 9-1
Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour
Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.846
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 35.9
Optimal Cycle: 98 Level Of Service: D

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected Protected Protected
Rights: Protected Protected Protected Protected Protected Protected
Min. Green: 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 1 0 1 0 2 0 1
Volume Module:
Base Vol: 64 166 317 127 224 115 120 825 52 362 958 136
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 64 166 317 127 224 115 120 825 52 362 958 136
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99
PHF Volume: 65 168 320 128 226 116 121 833 53 366 968 137
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 65 168 320 128 226 116 121 833 53 366 968 137
Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj: 0.86 0.91 0.77 0.87 0.87 0.87 0.91 0.91 0.91 0.93 0.93
Lanes: 1.00 1.00 1.00 1.00 0.66 0.34 1.00 1.88 0.12 1.00 2.00
Final Sat.: 1641 1727 1468 1655 1093 561 1736 3238 204 1769 3538 1583
Capacity Analysis Module:
Vol/Sat: 0.04 0.10 0.22 0.08 0.21 0.21 0.07 0.26 0.26 0.21 0.27 0.09
Crit Moves: ****
Green/Cycle: 0.05 0.16 0.41 0.13 0.24 0.24 0.11 0.30 0.00 0.24 0.44 0.44
Volume/Cap: 0.85 0.60 0.54 0.60 0.85 0.85 0.63 0.85 0.00 0.85 0.63 0.20
Delay/Veh: 101.9 42.5 23.5 45.7 51.1 51.1 48.7 39.1 0.0 50.3 22.6 17.5
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 101.9 42.5 23.5 45.7 51.1 51.1 48.7 39.1 0.0 50.3 22.6 17.5
HCM2KAV9: 4 6 8 5 13 13 5 15 69 14 12 3

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expm Tue Aug 23, 2005 14:21:03 Page 10-1
Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #15 W Baseline St/N Yew St

Average Delay (sec/veh): 4.5 Worst Case Level Of Service: Ff 52.1

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 0 0 1 0 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0
Volume Module:
Base Vol: 0 17 17 88 19 0 28 1331 27 0 0 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 17 17 88 19 0 28 1331 27 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90
PHF Volume: 0 19 19 98 21 0 31 1479 30 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol.: 0 19 19 98 21 0 31 1479 30 0 0 0
Critical Gap Module:
Critical Gap: 6.5 6.2 7.1 6.5 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1
FollowUpTime: 4.0 3.3 3.5 4.0 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2
Capacity Module:
Conflict Vol: 1583 762 832 1598 20 1590 1563 0.02 0.02 0.02 0.02
Potential Cap: 110 408 290 107 1590 1563 0.02 0.02 0.02 0.02 0.02
Move Cap.: 105 405 230 102 1563 1563 0.02 0.02 0.02 0.02 0.02
Volume/Cap: 0.18 0.05 0.42 0.21 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02
Level Of Service Module:
Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
Stopped Del: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
LOS by Move: A A A A A A A A A A A A
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: 167 188 188 188 188 188 188 188 188 188 188 188
Shared Queue: 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8
Shrd StpDel: 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8
Shared LOS: D D D D D D D D D D D D
ApproachDel: 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8 32.8
ApproachLOS: D D D D D D D D D D D D

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): OVERFLOW Worst Case Level of Service: F[xxxxx]

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0
Volume Module:
Base Vol: 22 11 0 0 87 27 0 0 0 0 0 0 27 1616 79
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 22 11 0 0 87 27 0 0 0 0 0 0 27 1616 79
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
PHF Volume: 24 12 0 0 95 29 0 0 0 0 0 0 29 1757 86
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol: 24 12 0 0 95 29 0 0 0 0 0 0 29 1757 86

Critical Gap Module:
Critical Gap: 7.1 6.5 xxxxx 6.5 6.2 xxxxx xxxxx 4.1 xxxxx xxxxx
FollowUpTim: 3.5 4.0 xxxxx 4.0 3.3 xxxxx xxxxx 2.2 xxxxx xxxxx

Capacity Module:
Conflict Vol: 985 1907 xxxxx 1864 926 xxxxx xxxxx 1 xxxxx xxxxx
Potential Cap: 229 69 xxxxx 72 324 xxxxx xxxxx 1620 xxxxx xxxxx
Move Cap: 0 68 xxxxx 71 323 xxxxx xxxxx 1620 xxxxx xxxxx
Volume/Cap: xxx 0.18 xxx 1.34 0.09 xxxxx xxxxx 0.02 xxxxx xxxxx

Level of Service Module:
Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.1 xxxxx xxxxx
Stopped Del: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 7.3 xxxxx xxxxx
LOS by Move: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Movement: 0 xxxxx xxxxx xxxxx 87 xxxxx xxxxx xxxxx xxxxx xxxxx
Shared Cap: 0 xxxxx xxxxx xxxxx 9.5 xxxxx xxxxx xxxxx xxxxx xxxxx
Shared Queue: xxxxx xxxxx xxxxx xxxxx 333.2 xxxxx xxxxx xxxxx xxxxx
Shrd StpDel: xxxxx xxxxx xxxxx xxxxx 333.2 xxxxx xxxxx xxxxx xxxxx
Shared LOS: xxxxx xxxxx xxxxx xxxxx 333.2 xxxxx xxxxx xxxxx xxxxx
ApproachDel: xxxxx xxxxx xxxxx xxxxx 333.2 xxxxx xxxxx xxxxx xxxxx
ApproachLOS: F F F F F F F F F F F F F F F F

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #52 S 4th Ave/S Heather St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.106
Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 7.4
Optimal Cycle: 0 Level of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0
Volume Module:
Base Vol: 9 31 2 9 52 22 9 14 10 1 28 7
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 9 31 2 9 52 22 9 14 10 1 28 7
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume: 10 35 2 10 59 25 10 16 11 1 32 8
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 10 35 2 10 59 25 10 16 11 1 32 8
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 10 35 2 10 59 25 10 16 11 1 32 8

Saturation Flow Module:
Saturation Flow: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.21 0.74 0.05 0.11 0.63 0.26 0.27 0.43 0.30 0.03 0.78 0.19
Final Sat: 181 625 40 96 557 236 229 356 254 23 653 163

Capacity Analysis Module:
Vol/Sat: 0.06 0.06 0.06 0.11 0.11 0.11 0.04 0.04 0.04 0.05 0.05 0.05
Crit Moves: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Delay Adj: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
AdjDel/Veh: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
LOS by Move: A A A A A A A A A A A A
ApproachDel: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
ApprAdjDel: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
LOS by Appr: A A A A A A A A A A A A

expm Tue Aug 23, 2005 14:21:03 Page 13-1
 Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
 2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #53 S 10th Ave/Dogwood St
 Average Delay (sec/veh): 1.8 Worst Case Level Of Service: BL 12.4j

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled Stop Sign Stop Sign
 Rights: Include Include Include Include Include Include
 Lanes: 0 0 1 1 0 0 0 0 1 1 0 0 0 0 1 1 0 0

Volume Module:
 Base Vol: 3 183 10 13 168 27 14 9 3 5 20 9
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Initial Bse: 3 183 10 13 168 27 14 9 3 5 20 9
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91
 PHF Volume: 3 201 11 14 185 30 15 10 3 5 22 10
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol.: 3 201 11 14 185 30 15 10 3 5 22 10

Critical Gap Module:
 Critical Gap: 4.1 xxx xxxxxx 4.2 xxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
 FollowUpTim: 2.2 xxx xxxxxx 2.3 xxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:
 Conflict Vol: 217 xxx xxxxxx 462 455 202 453 464 214
 Potent Cap.: 1335 xxx xxxxxx 513 504 843 521 498 831
 Move Cap.: 1312 xxx xxxxxx 483 494 841 503 488 827
 Volume/Cap: 0.00 xxx xxx 0.01 xxx xxx 0.03 0.02 0.00 0.01 0.05 0.01

Level Of Service Module:
 Queue: 0.0 xxx xxxxxx 0.0 xxx xxxxxx xxx xxx xxx xxx xxx
 Stopped Del: 7.7 xxx xxxxxx 7.8 xxx xxxxxx xxx xxx xxx xxx xxx
 LOS by Move: A * * * * *
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap.: xxx xxx xxx xxx xxx xxx 512 xxx xxx 550 xxx
 SharedQueue: xxx xxx xxx xxx xxx xxx 0.2 xxx xxx 0.2 xxx
 Shrd StpDel: xxx xxx xxx xxx xxx xxx 12.4 xxx xxx 12.0 xxx
 Shared LOS: * * * * *
 ApproachDel: xxxxxx 12.4 B
 ApproachLOS: B

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Saturday Midday Peak Hour

Scenario Report

Scenario: exsa

Command: exsa
 Volume: exsa
 Geometry: existing SAT
 Impact Fee: Default Impact Fee
 Trip Generation: null
 Trip Distribution: null
 Paths: Default Paths
 Routes: Default Routes
 Configuration: exsa

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Saturday Midday Peak Hour

Impact Analysis Report
 Level Of Service

Intersection	Base Del/Veh LOS	V/ C	Future Del/Veh LOS	V/ C	Change in
# 1 Pacific Ave/Mountain View Ln	B 10.3	0.613	B 10.3	0.613	+ 0.000 D/V
# 2 W Baseline St/4th Ave	A 9.8	0.588	A 9.8	0.588	+ 0.000 D/V
# 3 W Baseline St/10th Ave	B 13.0	0.613	B 13.0	0.613	+ 0.000 D/V
# 4 N Adair St/4th Ave	A 7.3	0.509	A 7.3	0.509	+ 0.000 D/V
# 5 N Adair St/10th Ave	B 11.0	0.544	B 11.0	0.544	+ 0.000 D/V
# 6 N Holladay St/10th Ave	A 9.6	0.000	A 9.6	0.000	+ 0.000 D/V
# 11 Pacific Ave/Quince St	C 28.2	0.670	C 28.2	0.670	+ 0.000 D/V
# 15 W Baseline St/N Yew St	D 33.2	0.000	D 33.2	0.000	+ 0.000 D/V
# 24 N Adair St/N Yew St	E 38.9	0.000	E 38.9	0.000	+ 0.000 D/V

Kittelsson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)
Intersection #1 Pacific Ave/Mountain View Ln

Cycle (sec): 100 Critical Vol./Cap. (X): 0.613
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 10.3
Optimal Cycle: 49 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected

Rights: Include Include Include Include

Min. Green: 1 0 0 0 1 0 0 0 0 0 1 0 1 0 2 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 1 0 1 0 2 0 0

Volume Module:

Base Vol.: 64 0 104 0 0 0 0 1306 39 72 1208 0

Growth Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 64 0 104 0 0 0 0 1306 39 72 1208 0

User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj.: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91

PHF Volume: 70 0 114 0 0 0 0 1435 43 79 1327 0

Reduced Vol.: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 70 0 114 0 0 0 0 1435 43 79 1327 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.95 1.00 0.85 1.00 1.00 1.00 1.00 0.92 0.92 0.92 0.92 0.92

Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.94 0.06 1.00 2.00 0.00

Final Sat.: 1805 0 1615 0 0 0 0 3390 101 1753 3505 0

Capacity Analysis Module:

Vol/Sat: 0.04 0.00 0.07 0.00 0.00 0.00 0.00 0.42 0.42 0.05 0.38 0.00

Crit Moves: 0.12 0.00 0.12 0.00 0.00 0.00 0.00 0.69 0.69 0.07 0.76 0.00

Green/Cycle: 0.34 0.00 0.61 0.00 0.00 0.00 0.00 0.61 0.61 0.61 0.50 0.00

Volume/Cap: 0.12 0.00 0.12 0.00 0.00 0.00 0.00 0.69 0.69 0.07 0.76 0.00

Delay/Veh: 41.7 0.0 48.0 0.0 0.0 0.0 0.0 8.8 8.8 53.4 4.6 0.0

Kittelsson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)
Intersection #2 W Baseline St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.588
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 9.8
Optimal Cycle: 36 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0 0

Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0 0

Volume Module:

Base Vol.: 0 71 61 36 70 0 40 1319 75 0 0 0

Growth Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 71 61 36 70 0 40 1319 75 0 0 0

User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj.: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Volume: 0 75 64 38 74 0 42 1388 79 0 0 0

Reduced Vol.: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 0 75 64 38 74 0 42 1388 79 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 0.97 0.81 0.79 0.97 1.00 0.78 0.78 0.82 1.00 1.00 1.00

Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.06 1.94 1.00 0.00 0.00 0.00

Final Sat.: 0 1845 1540 1504 1845 0 88 2892 1567 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.04 0.04 0.03 0.04 0.00 0.48 0.48 0.05 0.00 0.00 0.00

Crit Moves: 0.00 0.07 0.07 0.07 0.07 0.00 0.82 0.82 0.82 0.00 0.00 0.00

Green/Cycle: 0.00 0.59 0.61 0.37 0.58 0.00 0.59 0.59 0.06 0.00 0.00 0.00

Volume/Cap: 0.00 0.59 0.61 0.37 0.58 0.00 0.59 0.59 0.06 0.00 0.00 0.00

Delay/Veh: 0.0 50.0 54.7 40.8 49.4 0.0 3.3 3.3 1.3 0.0 0.0 0.0

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 W Baseline St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.613
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.0
Optimal Cycle: 38 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0

Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0 0

Volume Module:

Base Vol: 0 105 110 74 136 0 85 1266 36 0 0 0 0 0 0

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 0 105 110 74 136 0 85 1266 36 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97

PHF Volume: 0 108 113 76 140 0 88 1305 37 0 0 0 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 0 108 113 76 140 0 88 1305 37 0 0 0 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 0.97 0.82 0.67 0.98 1.00 0.78 0.78 0.82 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.13 1.87 1.00 0.00 0.00 0.00 0.00 0.00 0.00

Final Sat.: 0 1845 1554 1264 1862 0 187 2792 1557 0 0 0 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.06 0.07 0.06 0.08 0.00 0.47 0.47 0.02 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: ****

Green/Cycle: 0.00 0.12 0.12 0.12 0.12 0.00 0.76 0.76 0.76 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.00 0.48 0.59 0.49 0.61 0.00 0.61 0.61 0.03 0.00 0.00 0.00 0.00 0.00 0.00

Delay/Veh: 0.0 35.7 41.9 39.4 40.8 0.0 4.9 4.9 2.1 0.0 0.0 0.0 0.0 0.0 0.0

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 0.0 35.7 41.9 39.4 40.8 0.0 4.9 4.9 2.1 0.0 0.0 0.0 0.0 0.0 0.0

HCM2KAVG: 0 3 3 3 4 0 9 9 0 0 0 0 0 0 0

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 N Adair St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.509
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 7.3
Optimal Cycle: 31 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0

Volume Module:

Base Vol: 80 29 0 0 20 27 0 0 0 0 0 0 84 1167 19

Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Initial Bse: 80 29 0 0 20 27 0 0 0 0 0 0 84 1167 19

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Volume: 85 31 0 0 21 29 0 0 0 0 0 0 89 1241 20

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 85 31 0 0 21 29 0 0 0 0 0 0 89 1241 20

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.70 0.97 1.00 1.00 0.90 0.90 1.00 1.00 1.00 1.00 1.00 1.00 0.92 0.92 0.92

Lanes: 1.00 1.00 0.00 0.00 0.42 0.58 0.00 0.00 0.00 0.00 0.00 0.00 0.13 1.84 0.03

Final Sat.: 1332 1845 0 0 727 982 0 0 0 0 0 0 231 3208 52

Capacity Analysis Module:

Vol/Sat: 0.06 0.02 0.00 0.00 0.03 0.03 0.00 0.00 0.00 0.00 0.00 0.00 0.39 0.39 0.39

Crit Moves: ****

Green/Cycle: 0.13 0.13 0.00 0.00 0.13 0.13 0.00 0.00 0.00 0.00 0.00 0.00 0.76 0.76 0.76

Volume/Cap: 0.51 0.13 0.00 0.00 0.23 0.23 0.00 0.00 0.00 0.00 0.00 0.00 0.51 0.51 0.51

Delay/Veh: 39.2 28.4 0.0 0.0 30.1 30.1 0.0 0.0 0.0 0.0 0.0 0.0 4.0 4.0 4.0

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 39.2 28.4 0.0 0.0 30.1 30.1 0.0 0.0 0.0 0.0 0.0 0.0 4.0 4.0 4.0

HCM2KAVG: 3 1 0 0 1 1 0 0 0 0 0 0 6 6 6

exsa Tue Aug 23, 2005 14:21:30 Page 7-1

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.544
Loss time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 11.0
Optimal Cycle: 33 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Lanes: 1 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 0 1 0 1 0

Volume Module:
Base Vol: 85 109 0 0 106 60 0 0 0 95 1171 57
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 85 109 0 0 106 60 0 0 0 95 1171 57
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94
PHF Volume: 90 116 0 0 113 64 0 0 0 101 1246 61
Reduced Vol: 0 0 0 0 113 64 0 0 0 101 1246 61
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 90 116 0 0 113 64 0 0 0 101 1246 61

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adj: 0.63 0.94 1.00 1.00 0.96 0.80 1.00 1.00 1.00 0.91 0.91 0.91
Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.14 1.77 0.09
Final Sat.: 1192 1792 0 0 1828 1520 0 0 0 249 3065 149

Capacity Analysis Module:
Vol/Sat: 0.08 0.06 0.00 0.00 0.06 0.04 0.00 0.00 0.00 0.41 0.41 0.41
Crit Moves: ****
Green/Cycle: 0.14 0.14 0.00 0.00 0.14 0.30 0.00 0.00 0.00 0.75 0.75 0.75
Volume/Cap: 0.54 0.46 0.00 0.00 0.44 0.30 0.00 0.00 0.00 0.54 0.54 0.54
Delay/Veh: 40.3 33.8 0.0 0.0 33.1 30.7 0.0 0.0 0.0 4.6 4.6 4.6
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 40.3 33.8 0.0 0.0 33.1 30.7 0.0 0.0 0.0 4.6 4.6 4.6
HCM2kAvg: 4 3 0 0 3 2 0 0 0 7 7 7

exsa Tue Aug 23, 2005 14:21:30 Page 8-1

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #6 N Holladay St/10th Ave

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: A [9.6]

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0

Volume Module:
Base Vol: 19 88 0 0 76 17 16 0 16 0 0 0
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 19 88 0 0 76 17 16 0 16 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 20 93 0 0 80 18 17 0 17 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol.: 20 93 0 0 80 18 17 0 17 0 0 0

Critical Gap Module:
Critical Gap: 4.1 xxx xxx xxx xxx xxx 6.5 xxx 6.3 xxx xxx xxx
Followup: 2.2 xxx xxx xxx xxx xxx 3.6 xxx 3.4 xxx xxx xxx
Capacity Module:
Conflict Vol: 102 xxx xxx xxx xxx xxx 226 xxx 93 xxx xxx xxx
Potential Cap: 1472 xxx xxx xxx xxx xxx 745 xxx 943 xxx xxx xxx
Move Cap: 1467 xxx xxx xxx xxx xxx 735 xxx 939 xxx xxx xxx
Volume/Cap: 0.01 xxx xxx xxx xxx xxx 0.02 xxx 0.02 xxx xxx xxx
Level Of Service Module:
Queue: 0.0 xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx
Stopped Del: 7.5 xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx
LOS by Move: A * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Queue: 0.0 xxx xxx xxx xxx xxx xxx xxx 825 xxx xxx xxx
Shrd Stpel: 7.5 xxx xxx xxx xxx xxx xxx xxx 9.6 xxx xxx xxx
Shared LOS: A * * * * *
ApproachDel: xxxxxx
ApproachLOS: *

Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Base Volume Alternative)

***** Intersection #11 Pacific Ave/Quince St *****

Cycle (sec): 100 Critical Vol./Cap. (X): 0.670

Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 28.2

Optimal Cycle: 65 Level Of Service: C

***** Approach: North Bound South Bound East Bound West Bound *****

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected

Rights: Protected Protected Protected Protected Protected Protected

Min. Green: 0

Lanes: 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Volume Module: 64 77 222 125 113 74 105 733 69 269 860 135

Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Growth Adj: 64 77 222 125 113 74 105 733 69 269 860 135

Initial Bse: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 69 83 239 134 122 80 113 788 74 289 925 145

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 69 83 239 134 122 80 113 788 74 289 925 145

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 69 83 239 134 122 80 113 788 74 289 925 145

Saturation Flow Module: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adj/Sat: 0.91 0.96 0.82 0.91 0.91 0.91 0.94 0.93 0.93 0.94 0.94 0.84

Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat.: 1736 1828 1554 1736 1039 681 1787 3224 303 1787 3574 1599

Capacity Analysis Module: 0.04 0.05 0.15 0.08 0.12 0.12 0.06 0.24 0.24 0.16 0.26 0.09

Vol/Sat: 0.04 0.05 0.15 0.08 0.12 0.12 0.06 0.24 0.24 0.16 0.26 0.09

Crit Moves: 0.06 0.09 0.33 0.15 0.17 0.17 0.12 0.36 0.00 0.24 0.49 0.49

Green/Cycle: 0.67 0.53 0.47 0.53 0.67 0.67 0.53 0.67 0.00 0.67 0.53 0.19

Volume/Cap: 61.9 47.0 27.4 41.4 44.4 44.4 44.0 28.1 0.0 38.4 18.0 14.6

Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 61.9 47.0 27.4 41.4 44.4 44.4 44.0 28.1 0.0 38.4 18.0 14.6

HCM2Kavg: 3 3 6 5 7 4 12 67 10 10 3

Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

***** Intersection #15 W Basline St/N Yew St *****

Average Delay (sec/veh): 2.2 Worst Case Level Of Service: D [33.2]

***** Approach: North Bound South Bound East Bound West Bound *****

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0

Volume Module: 0 17 14 48 15 0 32 1359 19 0 0 0

Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Growth Adj: 0 17 14 48 15 0 32 1359 19 0 0 0

Initial Bse: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Volume: 0 18 15 51 16 0 34 1446 20 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol.: 0 18 15 51 16 0 34 1446 20 0 0 0

Critical Gap Module: 6.5 6.2 7.1 6.5 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

Critical Gap Module: 6.5 6.2 7.1 6.5 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

FollowUpTpm: 4.0 3.3 3.5 4.0 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2

Capacity Module: 733 800 1534 733 0 0 0 0 0 0 0 0

Conflict Vol: 733 800 1534 733 0 0 0 0 0 0 0 0

Potent Cap: 117 419 250 112 900 900 900 900 900 900 900 900

Move Cap: 113 419 250 112 900 900 900 900 900 900 900 900

Volume/Cap: 0.16 0.04 0.20 0.14 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.04

Level Of Service Module: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Stopped Del: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

LOS by Move: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Shared Cap: 168 194 194 168 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Shared Queue: 0.7 1.5 1.5 0.7 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Shrd StpDel: 31.5 33.2 33.2 31.5 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2

Shared LOS: 31.5 33.2 33.2 31.5 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2

ApproachDel: 31.5 33.2 33.2 31.5 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2

ApproachLOS: 31.5 33.2 33.2 31.5 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2

exsa Tue Aug 23, 2005 14:21:31 Page 11-1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
Existing Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): 3.1 Worst Case Level Of Service: E[38.9]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Uncontrolled Uncontrolled

Rights: Include Include Include Include

Lanes: 0 1 0 0 0 0 0 1 0 0 0 0 0 0 1 0 1 0

Volume Module: 27 19 0 0 41 23 0 0 0 22 1208 44

Base Vol: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Growth Adj: 27 19 0 0 41 23 0 0 0 22 1208 44

Initial Bse: 27 19 0 0 41 23 0 0 0 22 1208 44

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90

PHF Volume: 30 21 0 0 46 26 0 0 0 24 1342 49

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol.: 30 21 0 0 46 26 0 0 0 24 1342 49

Critical Gap Module:

Critical Gp: 7.1 6.5 xxxxx xxxxx 6.6 6.3 xxxxx xxxxx xxxxx 4.1 xxxxx xxxxx

FollowUp: 3.5 4.0 xxxxx xxxxx 4.1 3.4 xxxxx xxxxx xxxxx 2.2 xxxxx xxxxx

Capacity Module:

Conflict Vol: 749 1444 xxxxx xxxxx 1420 698 xxxxx xxxxx xxxxx 4 xxxxx xxxxx

Potent Cap: 328 132 xxxxx xxxxx 134 434 xxxxx xxxxx xxxxx 1605 xxxxx xxxxx

Move Cap: 222 129 xxxxx xxxxx 131 433 xxxxx xxxxx xxxxx 1599 xxxxx xxxxx

Volume/Cap: 0.14 0.16 xxxxx xxxxx 0.35 0.06 xxxxx xxxxx xxxxx 0.02 xxxxx xxxxx

Level Of Service Module:

Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.0 xxxxx xxxxx

Stopped Del: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 7.3 xxxxx xxxxx

LOS by Move: * * * * * * * * * * A * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 171 xxxxx xxxxx xxxxx xxxxx 175 xxxxx xxxxx xxxxx xxxxx 0.0 xxxxx xxxxx

Shared Queue: 1.2 xxxxx xxxxx xxxxx xxxxx 1.8 xxxxx xxxxx xxxxx xxxxx 7.3 xxxxx xxxxx

Shrd Stpel: 34.7 xxxxx xxxxx xxxxx xxxxx 38.9 xxxxx xxxxx xxxxx A * *

Shared LOS: D * * * * * E xxxxx * *

ApproachDel: 34.7 D 38.9 E xxxxx * *

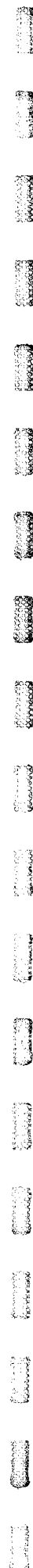
ApproachLOS: D E

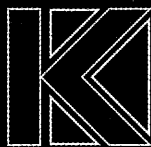
Traffic 7.7.1115 (c) 2004 Dowling Assoc. Licensed to KITTELSON, PORTLAND

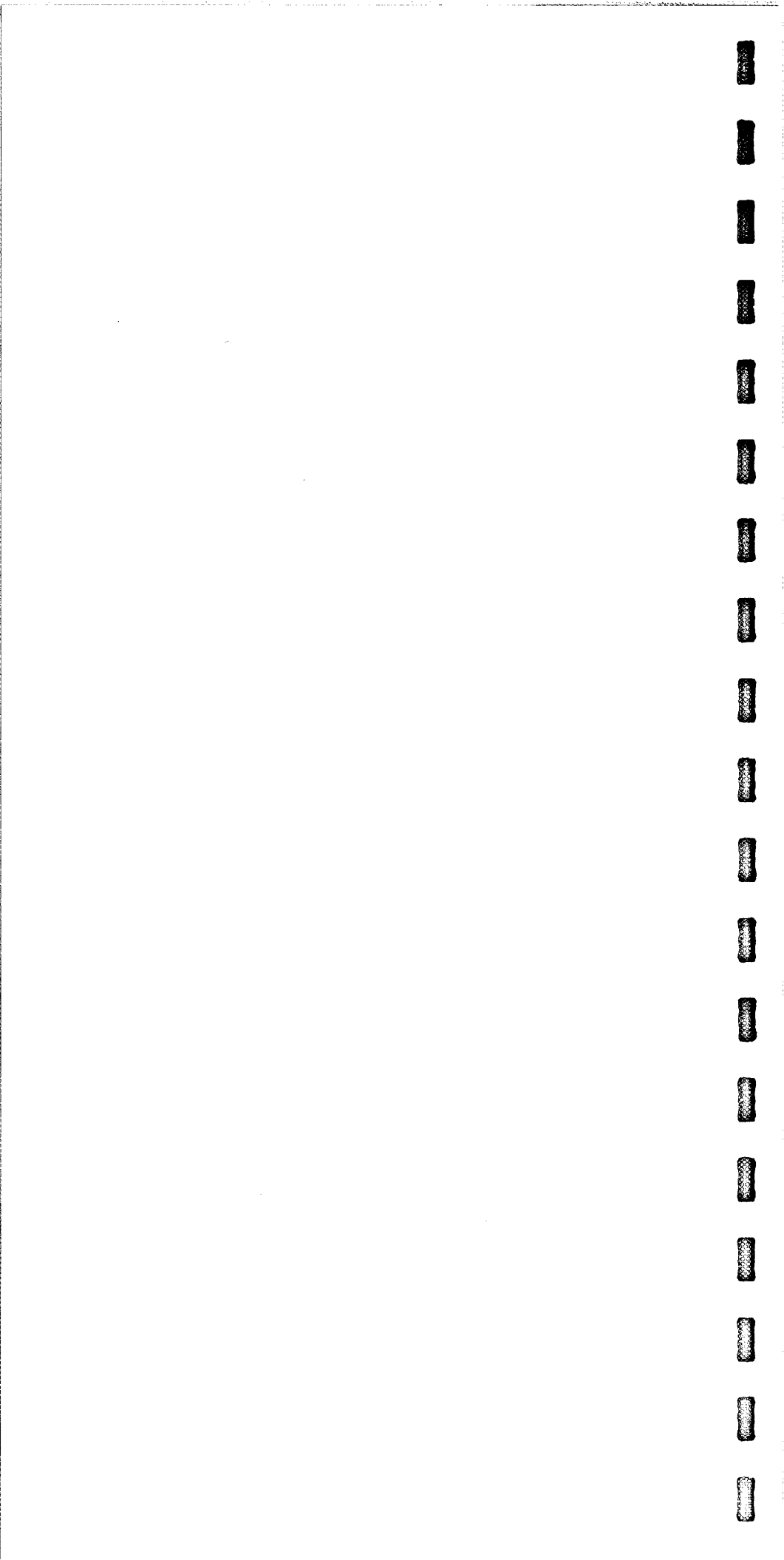
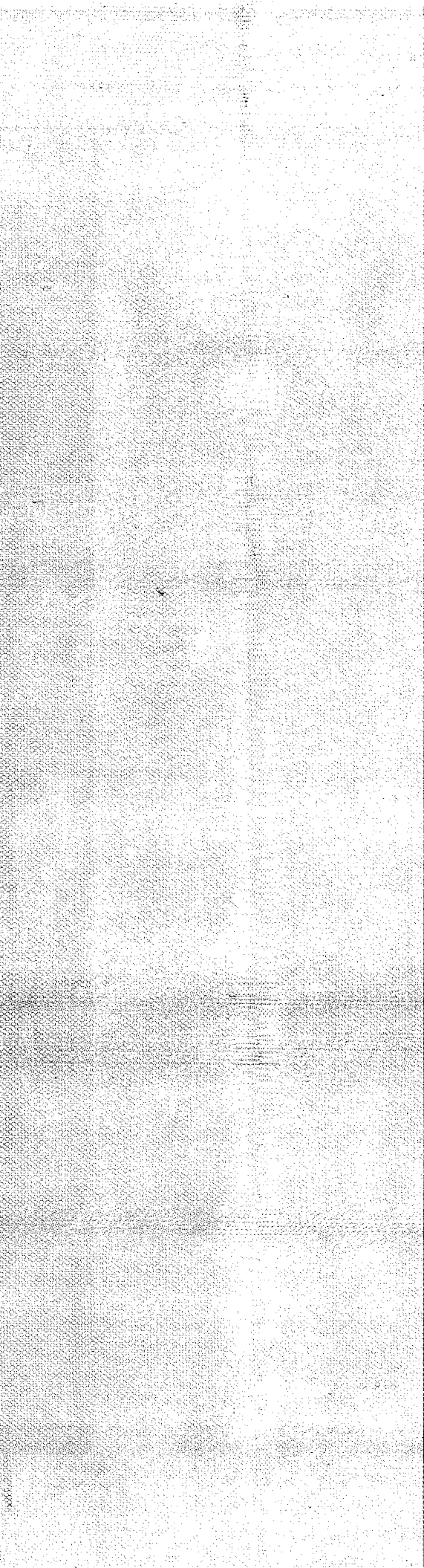
Oregon Department of Transportation Transportation Development Branch Transportation Planning Analysis Unit					
Preliminary Traffic Signal Warrant Analysis¹					
Major Street: <u>N. ADAIR ST.</u>			Minor Street: <u>N. YEW ST.</u>		
Project: <u>Cornelius Wal-Mart</u>			City/County: <u>Cornelius, OR</u>		
Year: <u>2005 Existing</u>			Alternative: <u>Weekday PM Peak Hour</u>		
Preliminary Signal Warrant Volumes					
Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100	70	percent of standard warrants 100	70
Case A: Minimum Vehicular Traffic					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
Case B: Interruption of Continuous Traffic					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250
5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)					
		100 percent of standard warrants			
		70 percent of standard warrants ²			
Preliminary Signal Warrant Calculation					
	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	10,600	17,220	NO
	Minor	1	2,650	1,140	
Case B	Major	2	15,900	17,220	NO
	Minor	1	1,350	1,140	
Analyst and Date: <u>CBT 8-30-05</u> Reviewer and Date:					

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.

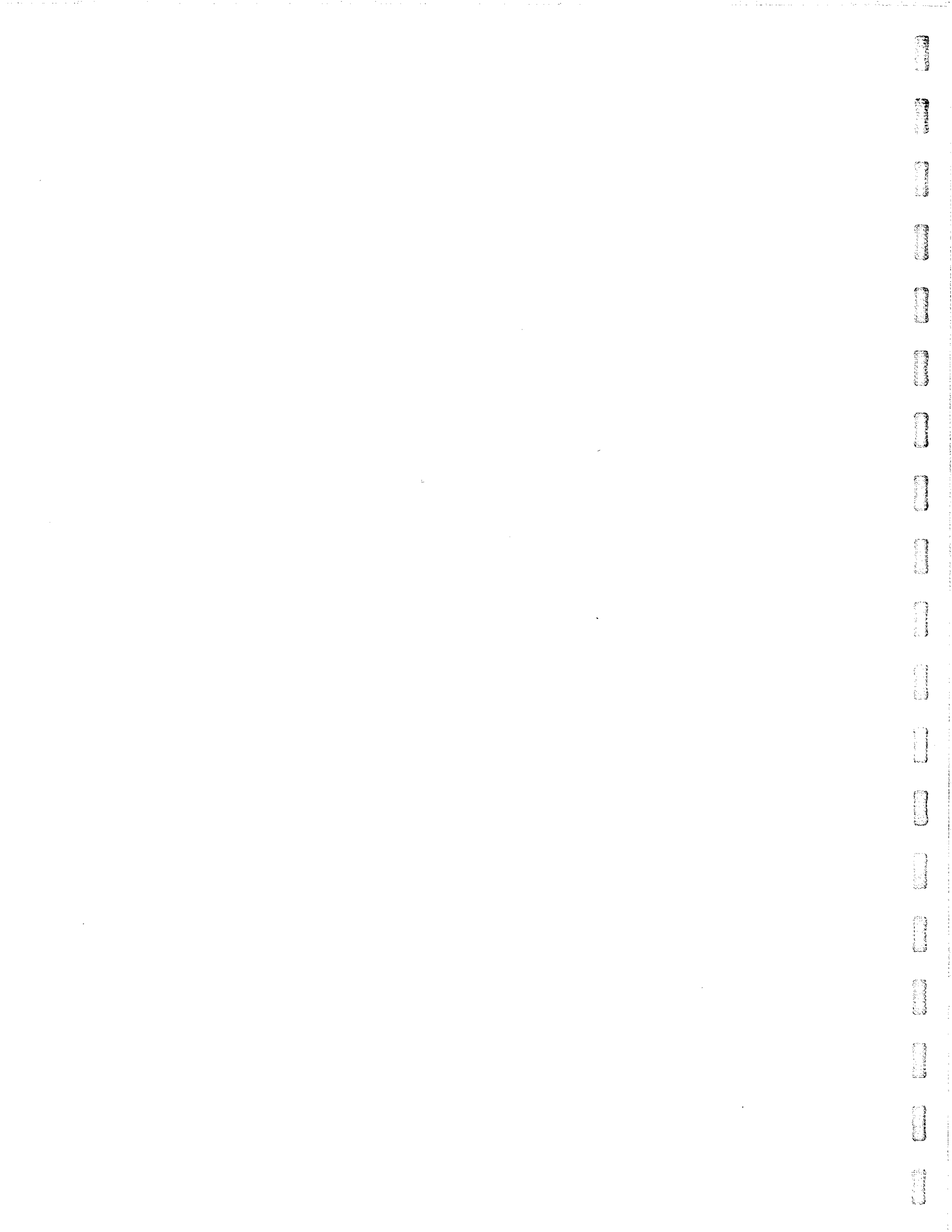






Appendix E

Crash Data



OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CRASH SUMMARIES BY YEAR BY COLLISION TYPE

Mountain View Lane at Pacific Ave/Tualatin Valley Hwy (Rt 8, Hwy 29) in Forest Grove, not Cornelius
1999 - 2003

COLLISION TYPE	FATAL CRASHES		NON- PROPERTY FATAL CRASHES		TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION		INTER- SECTION RELATED ROAD
	CRASHES	ONLY	CRASHES	DAMAGE									SECTION	SECTION	
YEAR: 1999															
REAR-END	0	1	2	3	0	1	1	1	2	1	3	0	3	0	0
TURNING MOVEMENTS	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0
1999 TOTAL	0	2	2	4	0	2	1	1	3	1	4	0	4	0	0
YEAR: 2000															
REAR-END	0	4	2	6	0	6	0	0	5	1	5	1	6	0	0
2000 TOTAL	0	4	2	6	0	6	0	0	5	1	5	1	6	0	0
YEAR: 2001															
REAR-END	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0
2001 TOTAL	0	1	0	1	0	1	0	0	1	0	1	0	1	0	0
YEAR: 2002															
TURNING MOVEMENTS	0	2	0	2	0	5	0	0	2	0	2	0	2	0	0
2002 TOTAL	0	2	0	2	0	5	0	0	2	0	2	0	2	0	0
YEAR: 2003															
REAR-END	0	1	3	4	0	2	0	0	3	1	3	1	4	0	0
TURNING MOVEMENTS	0	0	1	1	0	0	0	0	1	0	1	0	1	0	0
2003 TOTAL	0	1	4	5	0	2	0	0	4	1	4	1	5	0	0
FINAL TOTAL	0	10	8	18	0	16	1	1	15	3	16	2	18	0	0

COS380 4/11/2005

PAGE:2

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
Mountain View Lane at Pacific Ave/Tualatin Valley Hwy (Rt 8, Hwy 29) in Forest Grove, not Cornelius
1999 - 2003

029 TUALATIN VALLEY

SERIAL INVEST	P A U C O DATE E L G H R DAY D C S L K TIME	COUNTY CITY URBAN AREA	CLASS COMPT MLG TYP MILEPNT	RD CHAR DIRECT LOCNTN	INT-TYP (MEDIAN) LEGS (PLANES)	INT-REL OFFRD WTHR RNDST SURF COLL	CRASH CAUSE SVRTY	VEHICLE USE-TRLR OWNER V# TYPE	MOVE FROM TO	PRTC P# TYPE SVRTY	A S E LICNS PED E X RES LOC	ERROR	ACT EVENT	CAUSE
07184	N N N N	WASHINGTON FOREST GROVE PORTLAND UA	14 0 0	MT VIEW LN 17.46 TUALATIN VALLEY H 06	INTER E SW	3-LEG 99	N CLF N SIGNAL N DAY N DAY INJ	S-1STOP REAR INJ	1 NONE 1 STRGHT PRVTE E W PSNGR CA	1 DRV NONE	56 F OR-Y OR<25	000	011	
06504	N N N N	WASHINGTON FOREST GROVE PORTLAND UA	14 0 0	MT VIEW LN 17.46 TUALATIN VALLEY H 06	INTER SW	3-LEG 0	N CLD N SIGNAL N DAMN N DAY INJ	S-1STOP REAR INJ	1 NONE 0 STRGHT PRVTE SW NE PSNGR CA	1 DRV INJC 2 PSN INJC 3 PSN NO<5	20 F OTH-Y N-RES 36 F 01 F	000 000 000	011 000 000	00 00 00
03649	N N N N	WASHINGTON FOREST GROVE PORTLAND UA	14 0 0	MT VIEW LN 17.46 TUALATIN VALLEY H 06	INTER W	3-LEG 0	N CLF N SIGNAL N DAY N DAY PDD	S-1STOP REAR PDD	1 NONE 0 STRGHT PRVTE W E PSNGR CA	1 DRV NONE	26 M OR-Y OR<25	016	038	07
09857	N Y N	WASHINGTON FOREST GROVE PORTLAND UA	14 0 0	MT VIEW LN 17.46 TUALATIN VALLEY H 06	INTER W	3-LEG 99	N RAIN N SIGNAL N DLIT N DAY PDD	S-1STOP REAR PDD	1 NONE 1 STRGHT PRVTE W E PSNGR CA	1 DRV NONE	50 F OR-Y OR<25	000	011	01,27 00 01,27
11400	N N N N	WASHINGTON FOREST GROVE PORTLAND UA	14 0 0	MT VIEW LN 17.46 TUALATIN VALLEY H 03	INTER CN	3-LEG 0	N CLF N SIGNAL N DAY N DAY INJ	O-1TURN TURN INJ	1 NONE 0 STRGHT PRVTE W E PSNGR CA	1 DRV INJC	52 F OR-Y OR<25	000	011	00 00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE
 4th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius

1999 - 2003

COLLISION TYPE	FATAL		NON- PROPERTY		TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER-		INTER- SECTION RELATED ROAD
	CRASHES	FATAL	CRASHES	DAMAGE ONLY									SECTION	SECTION	
YEAR: 1999															
ANGLE	0	4	2	2	6	0	7	0	3	3	5	1	6	0	0
TURNING MOVEMENTS	0	0	2	2	2	0	0	0	2	0	1	1	2	0	0
1999 TOTAL	0	4	4	4	8	0	7	0	5	3	6	2	8	0	0
YEAR: 2000															
ANGLE	0	5	0	0	5	0	7	0	3	2	3	2	5	0	0
TURNING MOVEMENTS	0	0	1	1	1	0	0	0	1	0	1	0	1	0	0
2000 TOTAL	0	5	1	1	6	0	7	0	4	2	4	2	6	0	0
YEAR: 2001															
ANGLE	0	1	2	2	3	0	2	0	3	0	2	1	3	0	0
REAR-END	0	0	1	1	1	0	0	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	1	1	1	2	0	1	0	2	0	2	0	2	0	0
2001 TOTAL	0	2	4	4	6	0	3	0	6	0	4	2	6	0	0
YEAR: 2002															
ANGLE	0	4	1	1	5	0	6	0	3	2	3	2	5	0	0
BACKING	0	0	1	1	1	0	0	0	1	0	1	0	1	0	0
2002 TOTAL	0	4	2	2	6	0	6	0	4	2	4	2	6	0	0
YEAR: 2003															
ANGLE	0	2	0	0	2	0	4	0	2	0	2	0	2	0	0
TURNING MOVEMENTS	0	1	0	0	1	0	1	0	1	0	1	0	1	0	0
2003 TOTAL	0	3	0	0	3	0	5	0	3	0	3	0	3	0	0
FINAL TOTAL	0	18	11	11	29	0	28	0	22	7	21	8	29	0	0

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
4th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

029 TUALATIN VALLEY

[illegible]

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

4th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

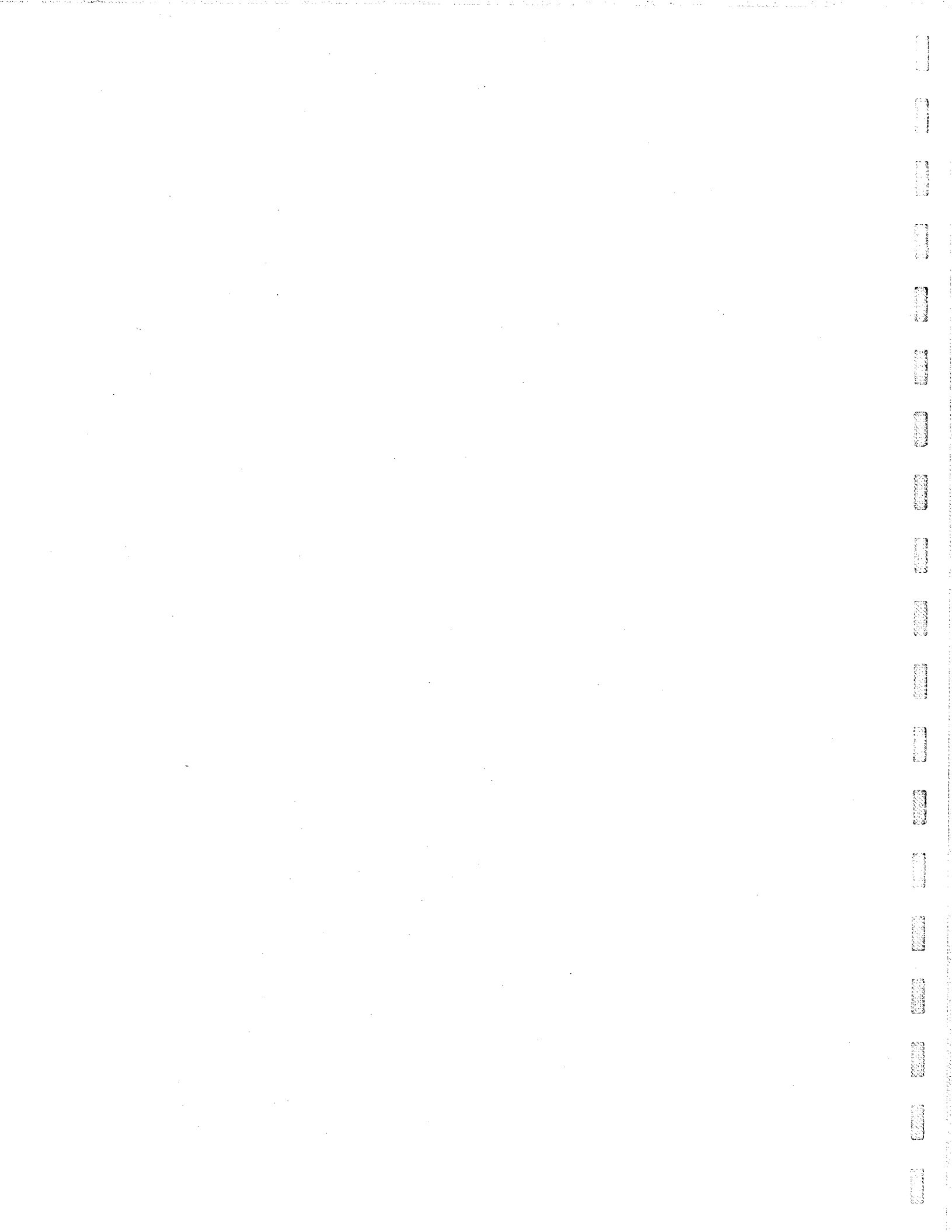
029 TUALATIN VALLEY[illegible]

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
4th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

029 TUALATIN VALLEY

[illegible]

SER#	INVEST	D C S W E A U C O L G H R C S L K	DATE	COUNTY	URBAN AREA	CLASS MIG TYP MILEPNT	CONN # FIRST STREET SECOND STREET	RD CHAR DIRECT LOCN	INT-TYP (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CNTL	N STOP SIGN	N WET DAY	N RAIN	CRASH COLL SVRTY	VEHICLE USE-TRLR OWNER V# TYPE	MOVE FROM TO	PRTC INJ TYPE SVRTY	A S GE LICNS PED EX RES LOC	ERROR	ACT EVENT	CAUSE
08106	NO RPT	N N N N	09/03/2000	WASHINGTON CORNELIUS	PORTLAND UA	14 1 0	BASELINE ST 4TH AVE	INTER CN 04	CROSS 0	N STOP SIGN	N DAY	N WET DAY	N RAIN	ANGL-OT ANGL INJ	1 NONE 0 STRGHT PRVTE PSNGR CA	W E	1 DRV NONE	47 M OR-Y OR<25	000	02	
01331	CITY	N N N N	02/08/2002	WASHINGTON CORNELIUS	PORTLAND UA	14 1 0	BASELINE ST 4TH AVE	INTER CN 04	CROSS 0	N STOP SIGN	N DAY	N CLR	N DRY	ANGL-OT ANGL INJ	1 NONE 0 STRGHT PRVTE PSNGR CA	W E	1 DRV INJC	50 M OR-Y OR<25	015	02	
01332	CITY	N N N	02/14/2003	WASHINGTON CORNELIUS	PORTLAND UA	14 1 0	BASELINE ST	INTER CN 04	CROSS 0	N TRF SIGNAL	N DAY	N CLD	N DRY	ANGL-OT ANGL INJ	1 NONE STRGHT PRVTE PSNGR CA	W E	1 DRV INJC	66 F OR-Y OR<25	013,028,080 000 038	04 00 04	
04064	CITY	N N N	05/18/2003	WASHINGTON CORNELIUS	PORTLAND UA	14 1 0	BASELINE ST 4TH AVE	INTER CN 04	CROSS 0	N UNKNOWN	N DAY	N CLR	N DRY	BIKE TURN INJ	1 NONE TURN-L PRVTE PSNGR CA	N E	1 DRV NONE	84 M OR-Y OR<25	000 027	08,02 00 08,02	
																			041	00	



OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE
 4th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius

1999 - 2003

COLLISION TYPE	FATAL CRASHES		NON- PROPERTY DAMAGE ONLY		TOTAL CRASHES		PEOPLE KILLED		PEOPLE INJURED		TRUCKS		DRY SURF		WET SURF		DAY		DARK		INTER- SECTION RELATED ROAD		OFF- ROAD	
	FATAL CRASHES	FATAL CRASHES	NON- PROPERTY DAMAGE ONLY	NON- PROPERTY DAMAGE ONLY	TOTAL CRASHES	TOTAL CRASHES	PEOPLE KILLED	PEOPLE KILLED	PEOPLE INJURED	PEOPLE INJURED	TRUCKS	TRUCKS	DRY SURF	DRY SURF	WET SURF	WET SURF	DAY	DAY	DARK	DARK	INTER- SECTION RELATED ROAD	INTER- SECTION RELATED ROAD	OFF- ROAD	OFF- ROAD
YEAR: 1999																								
ANGLE	0	4	2	2	6	6	0	0	7	7	0	0	3	3	3	3	5	5	1	1	6	6	0	0
TURNING MOVEMENTS	0	0	2	2	2	2	0	0	0	0	0	0	2	2	0	0	1	1	1	1	2	2	0	0
1999 TOTAL	0	4	4	4	8	8	0	0	7	7	0	0	5	5	3	3	6	6	2	2	8	8	0	0
YEAR: 2000																								
ANGLE	0	5	0	0	5	5	0	0	7	7	0	0	3	3	2	2	3	3	2	2	5	5	0	0
2000 TOTAL	0	5	0	0	5	5	0	0	7	7	0	0	3	3	2	2	3	3	2	2	5	5	0	0
YEAR: 2001																								
ANGLE	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0
2001 TOTAL	0	0	2	2	2	2	0	0	0	0	0	0	2	2	0	0	2	2	0	0	2	2	0	0
YEAR: 2002																								
ANGLE	0	2	1	1	3	3	0	0	4	4	0	0	1	1	2	2	1	1	2	2	3	3	0	0
REAR-END	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0
2002 TOTAL	0	2	2	2	4	4	0	0	4	4	0	0	2	2	2	2	2	2	2	2	4	4	0	0
YEAR: 2003																								
REAR-END	0	0	1	1	1	1	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	0
2003 TOTAL	0	1	1	1	2	2	0	0	1	1	0	0	2	2	0	0	2	2	0	0	2	2	0	0
FINAL TOTAL	0	12	9	9	21	21	0	0	19	19	0	0	14	14	7	7	15	15	6	6	21	21	0	0

CDS360 4/11/2005

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
4th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

PAGE: 2

029 TUNLAIN VALLEY

SER#	INVEST	D C S L K	P E A U C O D	R S W	DATE	COUNTY	CITY	URBAN AREA	CLASS	COMPT	CONN #	RD CHAR	INT-TYP	LEGS	TRAF-INT-REL	OFFRD	WTHR	CRASH	VEHICLE	USE-TRLR	MOVE	FROM	TO	V#	TYPE	OWNER	PRTC	INJ	A S	G E	L I C N S	B E D	ERROR	ACT EVENT	CAUSE		
00167	N	N	N	N	N	01/08/1999	WASHINGTON	CORNELIUS	14	1	BASELINE ST	INTER	CROSS	0	N	UNKNOWN	N	CLR	ANGL-OT	1	NONE	0	STRGHT	PRVTE	W E	1	DRV	INJC	61	M	OR-Y	OR<25	000	000	02		
						11A	PORTLAND UA		0	17.03	4TH AVE	03						INJ	PSNGR	CA														015	02		
01419	N	N	N	N	N	02/16/1999	WASHINGTON	CORNELIUS	14	1	BASELINE ST	INTER	CROSS	0	N	CHANNEL	N	RAIN	ANGL-OT	1	NONE	0	STRGHT	PRVTE	W E	1	DRV	NONE	31	M	OR-Y	OR<25	000	053	02		
						4P	PORTLAND UA		0	17.03	4TH AVE	03						PDO	PSNGR	CA														000	053	02	
03047	N	N	N	N	N	04/09/1999	WASHINGTON	CORNELIUS	14	1	BASELINE ST	INTER	CROSS	0	N	STOP SIGN	N	CLD	ANGL-OT	1	NONE	0	STRGHT	PRVTE	W E	1	DRV	INJB	51	M	OR-Y	OR<25	000	010	02		
						1P	PORTLAND UA		0	17.03	4TH AVE	03						INJ	PSNGR	CA															000	010	02
07199	N	N	N	N	N	08/06/2000	WASHINGTON	CORNELIUS	14	1	BASELINE ST	INTER	CROSS	0	N	STOP SIGN	N	CLR	ANGL-OT	1	NONE	0	STRGHT	PRVTE	N S	1	DRV	INJC	24	M	OR-Y	OR<25	000	000	03		
						5P	PORTLAND UA		0	17.03	4TH AVE	03						INJ	PSNGR	CA															021	000	03
05358	N	N	N	N	N	06/23/2001	WASHINGTON	CORNELIUS	14	1	BASELINE ST	INTER	CROSS	0	N	ONE-WAY	N	CLR	O-1TURN	1	NONE	0	STRGHT	PRVTE	W E	1	DRV	INJC	26	M	OR-Y	OR<25	000	000	02		
						UNK	PORTLAND UA		0	17.03	S 4TH AVE	03						PDO	PSNGR	CA															000	000	02
																			2	NONE	0	TURN-L	PRVTE	N E	1	DRV	NONE	29	M	OR-Y	OR<25	000	001	02			

OREGON DEPARTMENT OF TRANSPORTATION TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
4th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

[illegible]

CDS380 4/11/2005

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
4th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

PAGE: 5

029 TUALATIN VALLEY

SER#. INVEST
D S R S W O DATE
P A U C H R DAY
S E L G H R DAY
E A L C S L K TIME

CLASS	COMPNT	CONN #	RD CHAR	INT-TYP
	MLG TYP	FIRST	DIRECT	(MEDIAN)
	MILEPNT	SECOND	LOCTN	LEGS
		STREET		(#LANES)

RD CHAR
DIRECT
LOCTN

INT-TYP	INT-REL	OFFRD	WTHR	CRASH
(MEDIAN)		RNDBT	SURF	COLL
LEGS	TRAF-			
#LANES)	CNTI.	DRVMY	LIGHT	SVRTY

VEHICLE	MOVE
USE-TRLR	FROM
OWNER	TO
TYPE	

PTC	INJ	AS
TYPE	SVR	EX
		PE
		LOC

CAUSE	ACT	EVENT	ERROR	CC	ED
-------	-----	-------	-------	----	----

2 NONE 0 STOP

PRVTE W E
PSNGR CA

021

000

22 F OR-Y
OR<25

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
 CRASH SUMMARIES BY YEAR BY COLLISION TYPE
 10th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius

PAGE: 1

1999 - 2003

COLLISION TYPE	FATAL CRASHES			NON- PROPERTY DAMAGE ONLY			TOTAL CRASHES	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION RELATED	INTER- SECTION OFF- ROAD
	FATAL CRASHES	FATAL	CRASHES	FATAL	CRASHES	ONLY										
YEAR: 1999																
ANGLE	0	0	0	2	2	0	0	0	0	0	1	1	1	1	2	0
TURNING MOVEMENTS	0	0	0	1	1	0	0	0	0	1	1	0	1	0	1	0
1999 TOTAL	0	0	0	3	3	0	0	0	0	1	2	1	2	1	3	0
YEAR: 2000																
ANGLE	0	1	1	1	2	0	3	0	3	0	2	0	2	0	2	0
BACKING	0	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0
REAR-END	0	1	1	1	2	0	1	0	1	0	2	0	1	1	2	0
TURNING MOVEMENTS	0	1	1	3	4	0	2	0	2	0	3	1	3	1	4	0
2000 TOTAL	0	3	3	6	9	0	6	0	6	0	8	1	7	2	9	0
YEAR: 2001																
ANGLE	0	4	4	1	5	0	4	1	4	1	4	1	5	0	5	0
REAR-END	0	1	1	0	1	0	1	0	1	0	1	0	0	1	1	0
TURNING MOVEMENTS	0	0	0	2	2	0	0	0	0	0	2	0	2	0	2	0
2001 TOTAL	0	5	5	3	8	0	5	1	5	1	7	1	7	1	8	0
YEAR: 2002																
ANGLE	0	3	3	1	4	0	5	0	5	0	4	0	4	0	4	0
REAR-END	0	1	1	0	1	0	1	0	1	0	1	0	0	1	1	0
TURNING MOVEMENTS	0	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0
2002 TOTAL	0	4	4	2	6	0	6	0	6	0	6	0	5	1	6	0
YEAR: 2003																
ANGLE	0	1	1	0	1	0	1	0	1	0	1	0	0	1	1	0
REAR-END	0	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0
TURNING MOVEMENTS	0	0	0	1	1	0	0	0	0	0	0	1	0	1	1	0
2003 TOTAL	0	1	1	2	3	0	1	0	1	0	2	1	1	2	3	0
FINAL TOTAL	0	13	13	16	29	0	18	2	25	4	22	7	29	0	29	0

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
10th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

CDS380 4/11/2005

029 TUALATIN VALLEY

SER#	INVEST	D C S L R	P A U C O D	DATE	COUNTY	CLASS	CONN #	STREET	FIRST	SECOND	RD CHAR	INT-TYP	INT-REL	OFFRD	WTHR	CRASH	VEHICLE	MOVE	PRTC	INJ	A S	E L I C N S	PED	ERROR	ACT	EVENT	CAUSE
10105	N N N N	WASHINGTON	14	0	16.68 N	10TH AVE	01	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		CORNELIUS	0	0	16.68 N	10TH AVE	01	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		PORTLAND UA	0	0	16.68 N	10TH AVE	01	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
02527	N N N N	WASHINGTON	14	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		CORNELIUS	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		PORTLAND UA	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06428	N N N N	WASHINGTON	14	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		CORNELIUS	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		PORTLAND UA	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
01554	N N N N	WASHINGTON	14	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		CORNELIUS	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		PORTLAND UA	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
03829	N N N N	WASHINGTON	14	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		CORNELIUS	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		PORTLAND UA	0	0	16.68 N	10TH AVE	02	INTER	CROSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

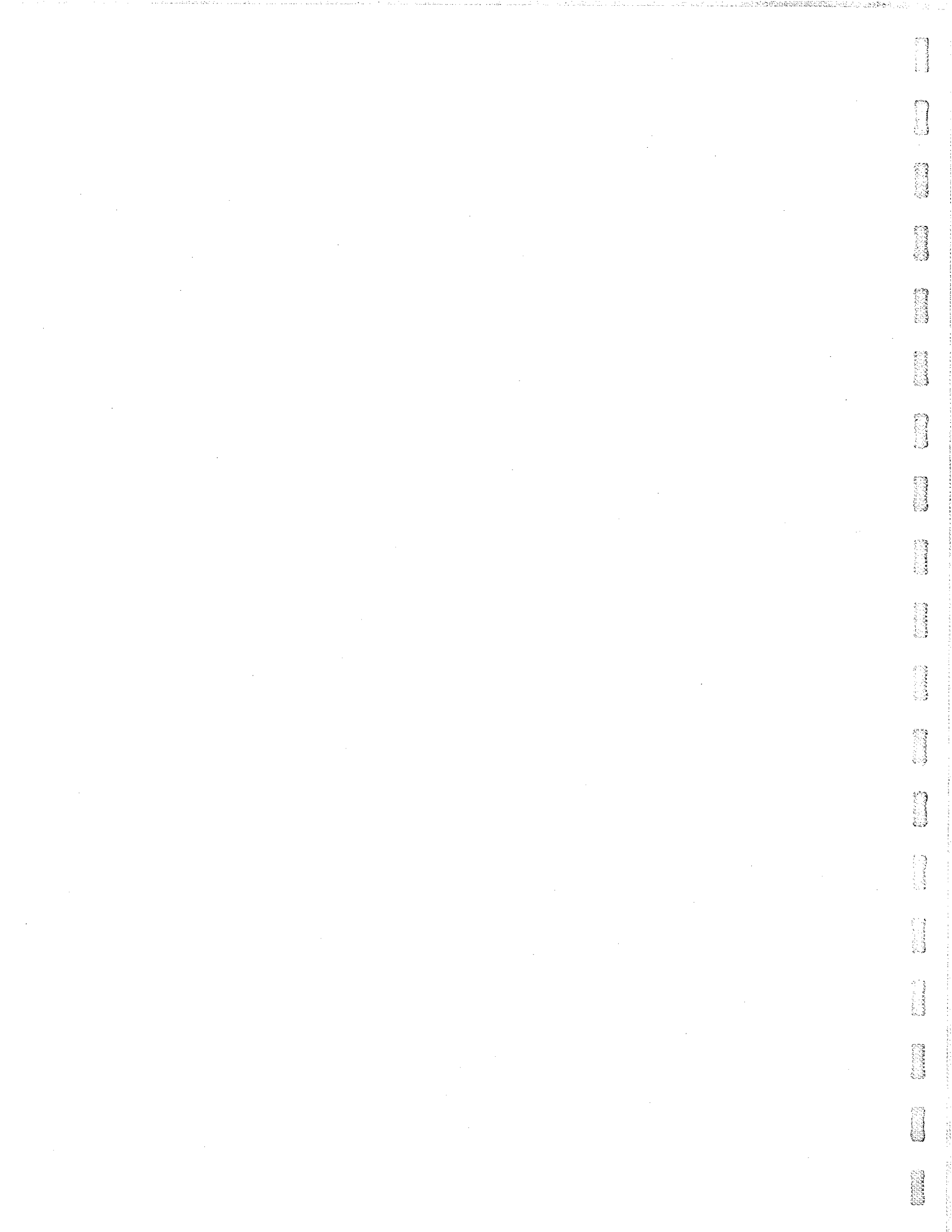
CDS380 4/11/2005

PAGE:4

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
10th Avenue at Adair Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

029 TUALATIN VALLEY

S P SER#	D R E L G H R D A Y	W S W O C O D A T E	COUNTY	CLASS COMPT	CONN #	RD CHAR DIRECT	INT-TYP (MEDIAN)	INT-REL LEGS	INT-REL (#LANES)	CRASH TRAF- CNTL	CRASH RDCT SURF	CRASH COLL	VEHICLE USE-TRLR	VEHICLE MOVE	PRTC INJ	P# TYPE SVRTY	A S G E LICNS PED	LOC	ERROR	ACT EVENT	CAUSE
INVEST	D C S L K	T M	AREA	MILEPNT	SECOND STREET	STREET	LOCNTN	DRVMY LIGHT	SVRTY	V# TYPE	ONNR	FROM	TO								
07395	N N N N N	N 08/13/2000	WASHINGTON	14	0	N ADAIR ST	INTER	CROSS	N N CLR	S-1STOP	1	NONE 0	STRTGHT	E W		1	DRV NONE	58 M OR-Y	000	011	
NONE		Sun 4p	CORNELIUS	0	16.68	N 10TH AVE	CN	0	TRF SIGNAL N DRY	REAR	PSNGR CA	PRVTE E W				1	DRV NONE	82 M OR-Y	026	000	07
			PORTLAND UA				02		N DAY	INJ								OR<25			07
11289	N N N N N	N 12/08/2000	WASHINGTON	14	0	N ADAIR ST	INTER	CROSS	N N CLD	S-OTHER	1	NONE 0	TURN-R	S E		2	PSN INJC	28 F		011	
CITY		Fri 5p	CORNELIUS	0	16.68	N 10TH AVE	CN	0	TRF SIGNAL N DRY	TURN	PSNGR CA	PRVTE S E				1	DRV NONE	29 M OR-Y	000		
			PORTLAND UA				04		N DLIT	PDO						2	PSN INJC	28 F	006	000	08
																		OR<25			08
85142	N N N N N	N 03/23/2001	WASHINGTON	14	1	BASELINE ST	INTER	CROSS	N N CLR	S-1STOP	1	NONE 0	STRTGHT	E W		1	DRV NONE	00 M UNK	026	000	10
NONE		Fri 5p	CORNELIUS	0	16.67	10TH AVE	E	0	TRF SIGNAL N DRY	REAR	PSNGR CA	PRVTE E W				1	DRV NONE	00 M UNK	026		10
			PORTLAND UA				06		N DUSK	INJ								UNK			
																				011	
																		24 M OR-Y	000		
01598	N N N N N	N 02/24/2002	WASHINGTON	14	1	BASELINE ST	INTER	CROSS	N N CLR	S-1STOP	1	NONE 0	STRTGHT	E W		1	DRV INJC	24 M OR-Y	000		10
NONE		Sun 6p	CORNELIUS	0	16.67	10TH AVE	W	0	TRF SIGNAL N DRY	REAR	PSNGR CA	PRVTE W E				1	DRV NONE	16 F OR-Y	026	000	10
			PORTLAND UA				06		N DUSK	INJ								OR<25			
																				012	
																		43 F OR-Y	000		
04477	N N N	N 06/05/2003	WASHINGTON	14	1	BASELINE ST	INTER	CROSS	N N CLR	S-1STOP	1	NONE 0	STRTGHT	E W		1	DRV INJC	43 F OR-Y	000		22, 12
NONE		Thu 12p	CORNELIUS	0	16.67	S 4TH AVE	W	0	TRF SIGNAL N DRY	REAR	PSNGR CA	PRVTE W E				1	DRV NONE	61 M OR-Y	026	006	22
			PORTLAND UA				06		N DAY	PDO						1	DRV NONE	61 M OR-Y	026	088	12
																		OR<25			



OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

CRASH SUMMARIES BY YEAR BY COLLISION TYPE
10th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius

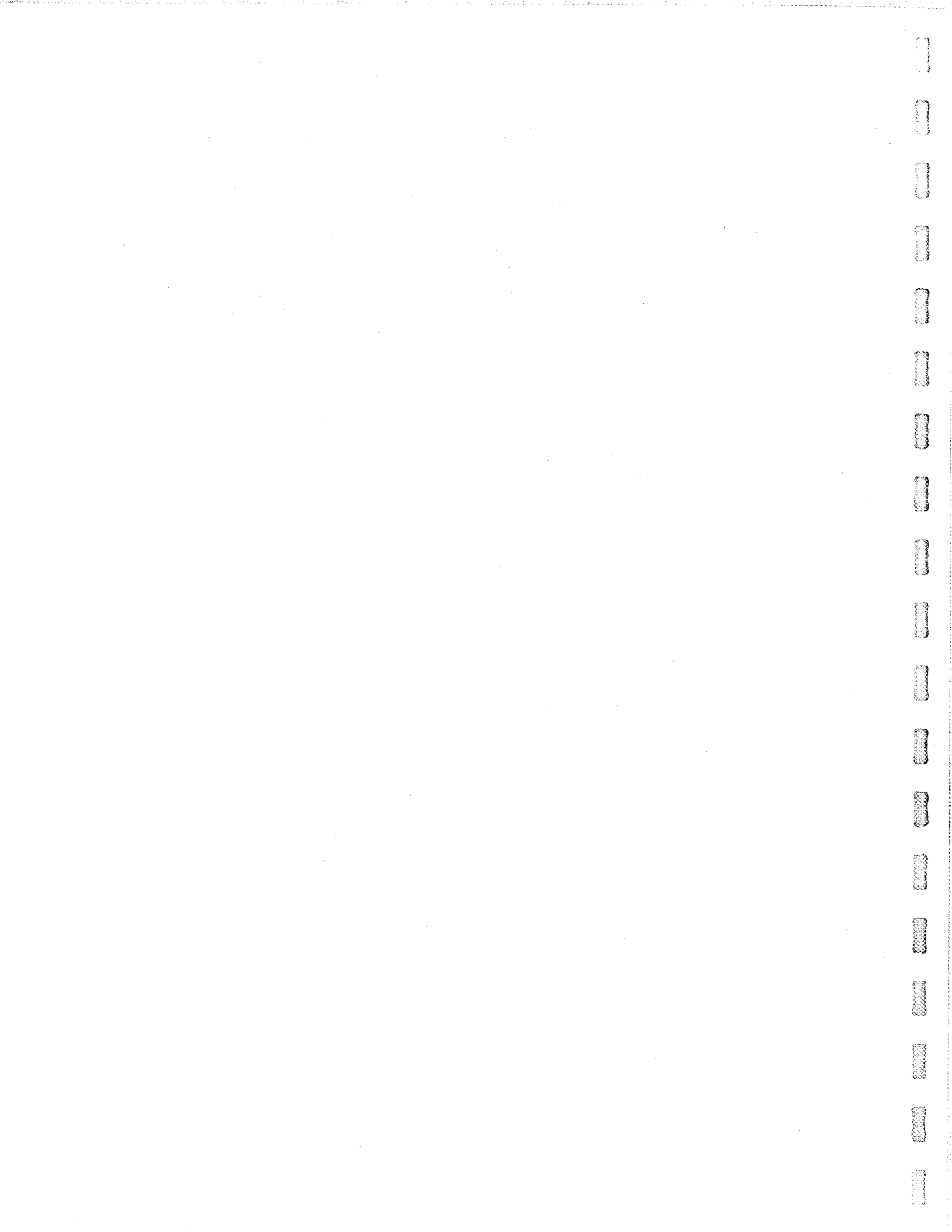
1999 - 2003

COLLISION TYPE	FATAL		NON- PROPERTY		TOTAL	PEOPLE KILLED	PEOPLE INJURED	TRUCKS	DRY SURF	WET SURF	DAY	DARK	INTER- SECTION	INTER- SECTION RELATED	OFF- ROAD
	CRASHES	CRASHES	FATAL	DAMAGE ONLY											
YEAR: 1999															
ANGLE	0	0	0	1	1	0	0	0	0	1	0	1	1	0	0
1999 TOTAL	0	0	0	1	1	0	0	0	0	1	0	1	1	0	0
YEAR: 2000															
ANGLE	0	1	0	0	1	0	3	0	1	0	1	0	1	0	0
TURNING MOVEMENTS	0	0	1	1	1	0	0	0	1	0	1	0	1	0	0
2000 TOTAL	0	1	1	1	2	0	3	0	2	0	2	0	2	0	0
YEAR: 2001															
ANGLE	0	2	0	0	2	0	2	0	1	1	2	0	2	0	0
REAR-END	0	1	0	0	1	0	1	0	1	0	0	1	1	0	0
TURNING MOVEMENTS	0	0	1	1	1	0	0	0	1	0	1	0	1	0	0
2001 TOTAL	0	3	1	1	4	0	3	0	3	1	3	1	4	0	0
YEAR: 2002															
REAR-END	0	1	0	0	1	0	1	0	1	0	0	1	1	0	0
2002 TOTAL	0	1	0	0	1	0	1	0	1	0	0	1	1	0	0
FINAL TOTAL	0	5	3	3	8	0	7	0	6	2	5	3	8	0	0

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING
10th Avenue at Baseline Street (Rt 8, Hwy 29) in Cornelius
1999 - 2003

029 TUALATIN VALLEY

[illegible]



ACTION CODES

Code	Short Description	Medium Description	Long Description
000	NONE	NO ACTION	No action or non-warranted
001	SKIDDED	SKIDDED	Skidded
002	ON/OFF V	ON/OFF STOP VEH	Getting on or off stopped or parked vehicle
003	LOAD OVR	OVRHNG STR OBJ	Overhanging load struck another vehicle, etc.
006	SLOW DN	SLOWED DOWN	Slowed down
007	AVOIDING	AVOIDING MANV	Avoiding maneuver
008	PAR PARK	PARALLEL PKNG	Parallel parking
009	ANG PARK	ANGLE PKNG	Angle parking
010	INTERFER	PSNGR INTERFERED	Passenger interfering with driver
011	STOPPED	STP IN TRAF/NO LFT	Stopped in traffic not waiting to make a left turn
012	STPL TRN	STP FOR LFT TURN	Stopped because of left turn signal or waiting, etc.
013	STP TURN	STP WHILE TURNING	Stopped while executing a turn
015	GO A/STOP	PROCEED A/ STOPPING	Proceed after stopping for a stop sign/flash red.
016	TRN A/RED	STOP/TURN ON RED	Turned on red after stopping
017	LOST CTRL	LOST CONTROL	Lost control of vehicle
018	EXIT DWY	ENT FRM ALLEY/DRWY	Entering street or highway from alley or driveway
019	ENTR DWY	ENT ALLEY FROM RD	Entering alley or driveway from street or highway
020	STR ENTR	STR OBJ BF/ENT	Before entering roadway, struck pedestrian, etc. on sidewalk or shoulder
021	NO DRVR	DRIVERLESS VEHICLE	Car ran away - no driver
022	PREV COL	STK OBJ PRIOR COL	Struck, or was struck by, vehicle or pedestrian in prior collision before acc. stabiliz
023	STALLED	VEHICLE STALLED	Vehicle stalled
024	DRVR DEA	DRVR DEAD BF CRASH	Dead by unassociated cause
025	FATIGUE	DRIVER ASLEEP	Fatigued, sleepy, asleep
026	SUN	BLINDED BY SUN	Driver blinded by sun
027	HDLGHTS	BLINDED / HEADLIGHTS	Driver blinded by headlights
028	ILLNESS	PHYSICAL ILLNESS	Physically ill
029	THRU MED	PLUNGED OVER MEDIAN	Vehicle crossed, plunged over, or through median barrier
030	PURSUIT	PURSING OTHER VEH	Pursuing or attempting to stop another vehicle
031	PASSING	PASSING	Passing situation
032	PKOFFRD	PARKED OFF RD	Vehicle parked beyond curb or shoulder
033	CROS MED	VEH CROSSED MED	Vehicle crossed earth or grass median
034	X N/SGNL	X-INTER NO SIGNAL	Crossing at intersection - no traffic signal present
035	X W/SGNL	X-INTER W/ SIGNAL	Crossing at intersection - traffic signal present
036	DIAGONAL	X-INTER DIAGONAL	Crossing at intersection - diagonally
037	BTWN INT	X-BTWN INTER	Crossing between intersections
038	DISTRCT	DISTRACTED	Driver's attention distracted
039	W/TRAFF-S	WALK SHLDR W/TRAFF	Walking, running, riding, etc., on shoulder WITH traffic
040	A/TRAFF-S	WALK SHLDR A/TRAFF	Walking, running, riding, etc., on shoulder FACING traffic
041	W/TRAFF-P	WALK PAVE W/TRAFF	Walking, running, riding, etc., on pavement WITH traffic
042	A/TRAFF-P	WALK PAVE A/TRAFF	Walking, running, riding, etc., on pavement FACING traffic
043	PLAY/IRD	PLAYING IN ROWY	Playing in street or road
044	PUSH MV	PUSH-WORK MV IN RD	Pushing or working on vehicle in road or on shoulder
045	WORK ON	WORK ON ROAD	Working in roadway or along shoulder
050	LAY ON RD	STANDLYING IN RD	Standing or lying in roadway
051	ENT OFFR	ENTER FROM OFF ROAD	Entering / starting in traffic lane from off-road
088	OTHER	OTHER	Other action
099	UNK	UNKNOWN	Unknown action

CAUSE CODES

Code	Short Description	Medium Description	Long Description
00	NO CODE	NO CODE APPLICABLE	No cause associated at this level
01	TOO-FAST	TOO FAST FOR COND	Speed too fast for conditions
02	NO-YIELD	FAILED YIELD ROW	Did not yield right-of-way
03	PAS-STOP	PASSED STOP SIGN	Passed stop sign or red flasher
04	DIS-RAG	DISREGARD R-A-G	Disregarded R-A-G traffic signal.
05	LEFT-CTR	DROVE WRONG SIDE	Drove left of center on two-way road
06	IMP-OVER	IMPROPER PASSING	Improper overtaking
07	TOO-CLO	FOLLOW TOO CLOSE	Followed too closely
08	IMP-TURN	IMPROPER TURN	Made improper turn
09	DRINKING	ALC OR DRUGS	Alcohol or Drug Involved
10	OTHR-IMP	OTHER DRIVE ERR	Other improper driving
11	MECH-DE	MECH DEFECT	Mechanical defect
12	OTHER	OTHER	Other (not improper driving)
13	IMP LN C	IMP LANE CHANGE	Improper change of traffic lanes
20	IMP PKNG	IMPROPER PARKING	Vehicle improperly parked
21	DEF STER	DEFECTIVE STEERING	Defective steering mechanism
22	DEF BRKE	DEFECTIVE BRAKES	Inadequate or no brakes
24	LOADSHF	LOAD SHIFTED	Vehicle lost load or load shifted
25	TIREFAIL	TIRE FAILURE	Tire Failure
26	PHANTOM	PHANTOM VEHICLE	Phantom / Non-contact Vehicle
27	INATTENT	INATTENTION	Inattention

ERR CODES

Code	Short Description	Medium Description	Long Description
000	NONE	NO ERROR	No error
001	WIDE TRN	WIDE TURN	Wide turn
002	CUT CORN	CUT CORNER	Cut corner on turn
003	FAIL TRN	F OBEY TRN	Failed to obey mandatory traffic turn signal, sign or lane markings
004	L IN TRF	LTRN FMT TRAF	Left turn in front of oncoming traffic
005	L PROHIB	LTRN PROHIB	Left turn where prohibited
006	FRM WRNG	T FRM WRNG LN	Turned from wrong lane
007	TO WRONG	T TO WRONG LN	Turned into wrong lane
008	ILLEG U	ILLEG U-TURN	U-turned illegally
009	IMP STOP	IMP STOP	Improperly stopped in traffic lane
010	IMP SIG	IMP/FAL SIG	Improper signal or failure to signal
011	IMP BACK	IMP BACKING	Backing improperly (Not parking)
012	IMP PARK	IMP PARKED	Improperly parked
013	UNPARK	IMP STRT PARK	Improper start leaving parked position
014	IMP STRT	IMP STRT STOP	Improper start from stopped position
015	IMP LGHT	IMP/NO LGHTS	Improper or no lights (vehicle in traffic)
016	NO DIM	NO DIM LGHTS	Failed to dim lights (until 4/1/97) / Inattention (after 4/1/97)
017	UNSF VEH	DR UNSAFE VEH	Driving unsafe vehicle (no other error apparent)
018	OTH PARK	PRK MAN NCLR	Entering, exiting parked position with insufficient clearance or other improper parking maneuver
019	DIS DRIV	DISRG DR SIG	Disregarded other driver's signal
020	DIS SGNL	DISRG TRF SIG	Disregarded traffic signal
021	RAN STOP	DISRG STP SGN	Disregarded stop sign or flashing red
022	DIS SGN	DISRG WRN SGN	Disregarded warning sign, flares or flashing amber
023	DIS OFCR	DISRG POL/FLG	Disregarded police officer or flagman
024	DIS EMER	DISRG SIREMR	Disregarded siren or warning of emergency vehicle
025	DIS RR	DISRG RR SIG	Disregarded RR signal, RR sign, or RR flagman
026	REAR-END	F AVOID STP V	Failed to avoid stopped or parked vehicle ahead other than school bus
027	BIKE ROW	FYLD ROW BIK	Did not have right-of-way over pedalcyclist
028	NO ROW	NO R-O-W	Did not have right-of-way
029	PED ROW	FYLD ROW PED	Failed to yield right-of-way to pedestrian
030	PAS CURV	PASS ON CURVE	Passing on a curve
031	PAS WRNG	PASS WRNG SID	Passing on the wrong side
032	PAS TANG	PASS TANGENT	Passing on straight road under unsafe conditions
033	PAS X-WK	PASS STP4PED	Passed vehicle stopped at crosswalk for pedestrian
034	PAS INTR	PASS AT INTER	Passing at intersection
035	PAS HILL	PASS ON HILL	Passing on crest of hill
036	NIPAS ZN	PASS NIPASSNG	Passing in "No Passing" zone
037	PAS TRAF	PASS ONC TRAF	Passing in front of oncoming traffic
038	CUT-IN	CUTTING IN	Cutting in (two lanes - two way only)
039	WRNGSIDE	DR WRONG SIDE	Driving on wrong side of the road
040	THRU MED	DR THRU MEDN	Driving through safety zone or over island
041	F/ST BUS	F/STP SCHL BUS	Failed to stop for school bus

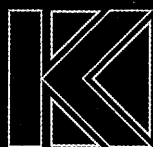
042	F/SLO MV	F/SLO SLO VEH	Failed to decrease speed for slower moving vehicle
043	TO CLOSE	FOLLOW TO CLOS	Following too closely (Must be on Officer's Report)
044	STRDL LN	STRDDR WRNG	Straddling or driving on wrong lanes
045	IMP CHG	IMP LANE CHG	Improper change of traffic lanes
046	WRNG WAY	WRNG WY11 WA	Wrong way on one-way roadway (Vehicle is deliberately traveling on wrong side)
047	BASCRULE	V BASIC RULE	Driving too fast for conditions (Not excessive speed)
048	OPN DOOR	OPN DOOR TRAF	Opened door into adjacent traffic lane
049	FMT SPD	F MAINT SPEED	Citation issued for "Failure to maintain reasonable speed"
050	SPEED	SPEED	Excessive Speed
051	RECKLESS	RECKLESS DRVN	Reckless driving
052	CARELESS	CARELESS DRVN	Careless driving
054	X N/SGNL	X-INT NO SGNL	Crossing at intersection - no traffic signal present
055	X W/SGNL	X-INT W/SGNL	Crossing at intersection - traffic signal present
056	DIAGONAL	X-INT DIAGNL	Crossing at intersection - diagonally
057	BTWN INT	X-BTWN INTER	Crossing between intersections
059	W/TRAFF-S	W SHLD W/TRAFF	Walking, running, riding, etc., on shoulder WITH traffic
060	A/TRAFF-S	W SHLD A/TRAFF	Walking, running, riding, etc., on shoulder FACING traffic
061	W/TRAFF-P	W PAVE W/TRAFF	Walking, running, riding, etc., on pavement WITH traffic
062	A/TRAFF-P	W PAVE A/TRAFF	Walking, running, riding, etc., on pavement FACING traffic
063	PLAYNRD	PLAY IN RDWY	Playing in street or road
064	PUSH MV	PUSH MV IN RD	Pushing or working on vehicle in road or on shoulder
065	WK IN RD	WORK IN RD	Working in roadway or along shoulder
070	LAYON RD	LYING IN RD	Standing or lying in roadway
073	DIS POL	DISRG POL/FLG	Disregarding Police (eluding)
080	FAIL LN	F MAINT LANE	Failed to maintain lane
081	OFF RD	RAN OFF RD	Ran off road
082	NO CLEAR	MISJUDGE CLR	Driver misjudged clearance
083	OVRSTEER	OVERSTEER	Over Correcting
084	INATTENT	INATTENTION	Inattention (4/11/1997)
085	OVERLOAD	OVERLOAD	Overloading or improper loading of vehicle with cargo or passengers
087	UNA DIS TC	UNA DISRG TCD	Unable to determine which driver disregarded traffic control device

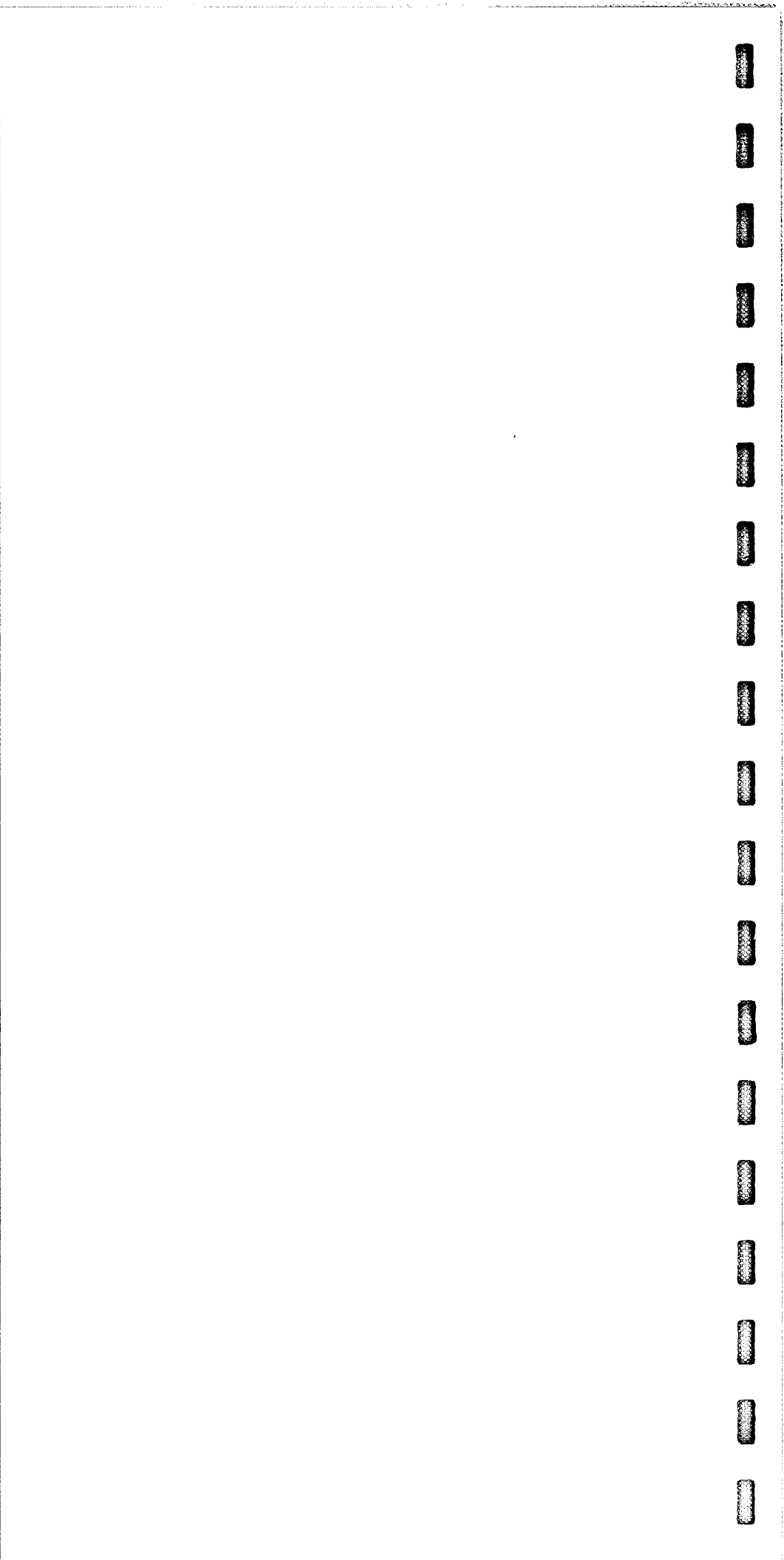
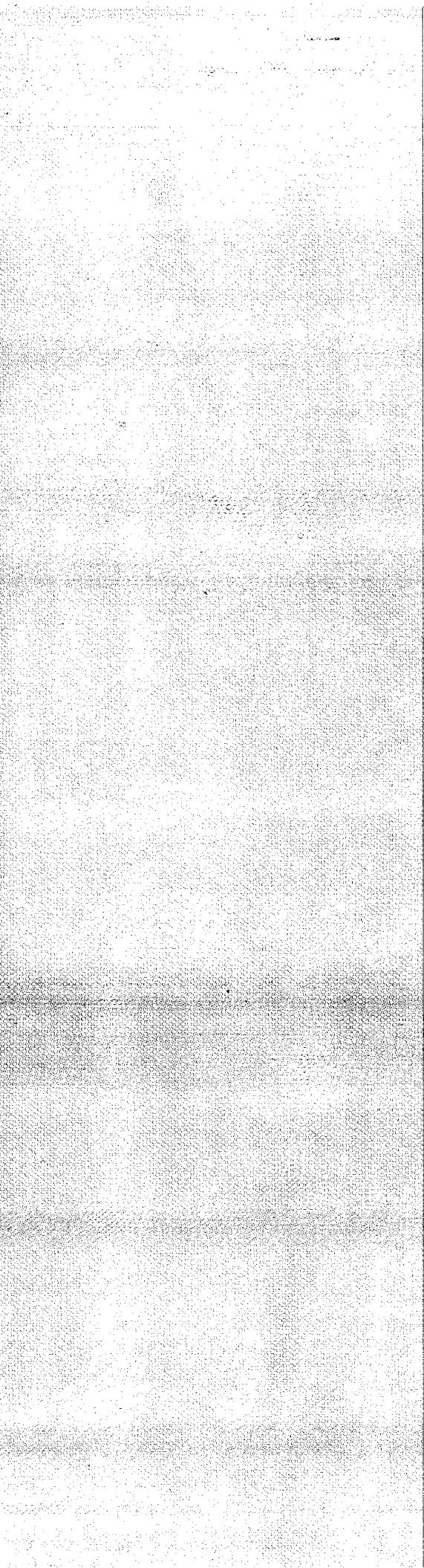
EVENT CODES

Code	Short Description	Medium Description	Long Description
001	FELJUMP	FELJUMPED MV	Occupant fell, jumped or was ejected from moving vehicle
002	INTERFER	PSNGR INTERFERED	Passenger interfered with driver
003	BUG INTF	ANML INTERFERED	Animal or insect in vehicle interfered with driver
004	PED INV	PED INVOLVED	Pedestrian involved (Non-pedestrian accident)
005	SUB-PED	SUBSEQUENT PED	"Sub-Ped": pedestrian injured subsequent to collision, etc.
006	BIKE INV	PEDALCYCLE INV	Tricycle-Bicycle involved
007	HITCHIKR	HITCHHIKER	Hitchhiker (soliciting a ride)
008	PSNGR TOW	PSNGR TOWED	Passenger being towed or pushed on conveyance
009	ON/OFF V	ON/OFF STOP VEH	Getting on or off stopped or parked vehicle (occupants only)
010	SUB OTRN	SUBSEQ OVERTURN	Overtaken after first harmful event
011	MV PUSH	VEH BEING PUSHED	Vehicle being pushed
012	MV TOWED	VEH TOWED/TOWING	Vehicle towed or had been towing another vehicle
013	FORCED	FORCED BY IMPACT	Vehicle forced by impact into another vehicle, pedalcyclist or pedestrian
014	SET MOTN	MV SET IN MOTION	Vehicle set in motion by non-driver (child released brakes, etc.)
015	RR ROW	RAILROAD ROW	At or on railroad right-of-way (not Light Rail)
016	LT RL ROW	LIGHT RAIL ROW	At or on Light-Rail right-of-way
017	RR HIT V	TRAIN HIT VEH	Train struck vehicle
018	V HIT RR	VEH HIT TRAIN	Vehicle struck train
019	HIT RR CAR	VEH HIT RR CAR	Vehicle struck railroad car on roadway
020	JACKKNIFE	JACKKNIFE	Jackknife, trailer or towed vehicle struck towing vehicle
021	TRL OTRN	TRAILER O TURN	Trailer or towed vehicle overturned
022	CN BROKE	TRLR CONN BROKE	Trailer connection broke
023	DETACH TRL	DETCHD TRLR STRNG	Detached trailing object struck other vehicle, non-motorist, or object
024	V DOOR OPN	V DOOR OPN IN TRAF	Vehicle door opened into adjacent traffic lane
025	WHEELOFF	WHEEL CAME OFF	Wheel came off
026	HOOD UP	HOOD FLEW UP	Hood flew up
028	LOAD SHIFT	LOAD SHIFTED	Lost load, load moved or shifted
029	TIREFAIL	TIRE FAILURE	Tire Failure
030	PET	PET	Pet: cat, dog and similar
031	LVSTOCK	LIVESTOCK	Stock: cow, calf, bull, steer, sheep, etc.
032	HORSE	HORSE	Horse, mule, or donkey
033	HRSE&RID	HORSE & RIDER	Horse and rider
034	GAME	GAME NO DEER/ELK	Wild animal, game (includes birds; not deer or elk)
035	DEER ELK	DEER OR ELK	Deer or elk, wapiti
036	ANML VEH	ANIMAL-DRAWN VEH	Animal-drawn vehicle
037	CULVERT	CULVERT/MANHOLE	Culvert, open low or high manhole
038	ATENUATN	IMPACT CUSHION	Impact attenuator
039	PK METER	PARKING METER	Parking meter
040	CURB	CURB	Curb (also narrow sidewalks on bridges)
041	JIGGLE	JIGGLE BAR NIMED	Jiggle bars or traffic snake for channelization

042	GDRL END	GUARDRAIL END	Leading edge of guardrail
043	GUARDRAIL	GUARDRAIL	Guard rail (not metal median barrier)
044	BARRIER	MEDIAN BARRIER	Median barrier (raised or metal)
045	WALL	WALL	Retaining wall or tunnel wall
046	BR RAIL	BRIDGE RAIL	Bridge railing (on bridge and approach)
047	BR ABUT	BRIDGE ABUTMENT	Bridge abutment (approach ends)
048	BR COLUMN	BRIDGE COLUMN	Bridge pillar or column (even though struck protective guard rail first)
049	BR GIRDER	BRIDGE GIRDER	Bridge girder (horizontal structure overhead)
050	ISLAND	TRAFFIC ISLAND	Traffic raised island
051	GORE	GORE	Gore
052	POLE UNK	POLE-UNKNOWN	Pole - type unknown
053	POLE UTL	POLE-UTILITY	Pole - power or telephone
054	ST LIGHT	POLE-ST LIGHT	Pole - street light only
055	TRF SGNL	POLE-TRAF SIGNAL	Pole - traffic signal and ped signal only
056	SGN BRDG	POLE-SIGN BRIDGE	Pole - sign bridge
057	STOPSIGN	STOP/YIELD SIGN	Stop or yield sign
058	OTH SGN	OTHER SIGN	Other sign, including street signs
059	HYDRANT	HYDRANT	Hydrant
060	MARKER	DELINEATOR	Delineator or marker (reflector posts)
061	MAILBOX	MAILBOX	Mailbox
062	TREE	TREE/STUMP	Tree, stump or shrubs
063	VEG OHED	VEGTN OVER RDWY	Tree branch or other vegetation overhead, etc.
064	WIRE/CBL	CABLE ACROSS RD	Wire or cable across or over the road
065	TEMP SGN	TEMP SIGN/BARR	Temporary sign or barricade in road, etc.
066	PERM SGN	PERM SIGN/BARR	Permanent sign or barricade in/off road
067	SLIDE	SLIDE/ROCKS	Slides, rocks off or on road, falling rocks
068	FRGN OBJ	FOREIGN OBJECT	Foreign obstruction/debris in road (not gravel)
069	EQP WORK	EQUIP WORKING	Equipment working in/off road
070	OTH EQP	OTHER EQUIPMENT	Other equipment in or off road (includes parked trailer, boat)
071	MAIN EQP	MAINTNCE EQUIP	Wrecker, street sweeper, snow plow or sanding equipment
072	OTHER WAL	OTHER WALL	Rock, brick or other solid wall
073	IRREG PAVMT	IRREGULAR PAVEMENT	Speed bump, other bump, pothold or pavement irregularity
075	CAVE IN	CAVE IN	Bridge or road cave in
076	HI WATER	HIGH WATER	High Water
077	SNO BANK	SNOW BANK	Snow Bank
078	HOLE	HOLE/RDWAY EDGE	Chuckhole in road, low or high shoulder at pavement edge
079	DITCH	CUT SLOPE/DITCH	Cut slope or ditch embankment
080	OBJ F MV	OBJ FRM OTHR VEH	Struck by rock or other object set in motion by other vehicle (incl. lost loads)
081	FLY-OBJ	OTHER MOVING OBJ	Struck by other moving or flying object
082	VEH HID	VEH OBSCURE VIEW	Vehicle obscured view
083	VEG HID	VEG OBSCURE VIEW	Vegetation obscured view
084	BLDG HID	BLD OBSCURE VIEW	View obscured by fence, sign, phone booth, etc.
085	WIND GUST	WIND GUST	Wind Gust
086	IMMERSED	IMMERSION	Vehicle immersed in body of water
087	FIRE/EXP	FIRE/EXPLOSION	Fire or Explosion

088	FENCE/BLD	FENCE/BUILDING	Fence or building, etc.
089	OTH ACDT	REFER OTHER ACDT	Accident related to another separate accident
090	TO 1 SIDE	TWO WAY ONE SIDE	Two-way traffic on divided roadway all routed to one side
092	PHANTOM	PHANTOM VEH	Other (phantom) non-contact vehicle (on PAR or report)
093	CELL-POL	CELLPHONE-POLICE	Cell phone (on PAR or driver in use)
094	VOL GDL	VIOL GRAD DR LIC	Teenage driver in violation of graduated license pgm
095	GUY WIRE	GUY WIRE	Guy wire
096	BERM	BERM	Berm (earthen or gravel mound)
097	GRAVEL	GRAVEL IN RDWY	Gravel in roadway
098	ABR EDGE	ABRUPT EDGE	Abrupt edge
099	CELL-WTN	CELLPHONE-WITNSS	Cell Phone use witnessed by other participant
100	UNK FIXD	UNK FIX OBJ	Unknown type of fixed object
101	OTHER OBJ	OTHER OBJ NOT FIXED	Other or unknown object, not fixed
104	OUTSIDE V	PSGR OUTSIDE VEHICLE	Passenger riding on vehicle exterior
105	PEDAL PSGR	PSNGR ON PEDALCYCLE	Passenger riding on pedalcycle
106	MAN WHLCH	NONMOTOR WHEELCHAI	Pedestrian in non-motorized wheelchair
107	MTR WHLCH	MOTORIZED WHEELCHAI	Pedestrian in motorized wheelchair
110	N-MTR	NM STR VEH	Non-motorist struck vehicle
111	S CAR VS V	ST CAR STRUCK VEH	Street Car/Trolley (on rails and/or overhead wire system) struck vehicle
112	V VS S CAR	VEH STRUCK ST CAR	Vehicle struck Street Car/Trolley (on rails and/or overhead wire system)
113	S CAR ROW	STREET CAR ROW	At or on Street Car/Trolley right-of-way
125	SHLDR	SHLDR GAVE	Shoulder gave way





Appendix F

Traffic Volume Growth Rate Worksheet

Project 7059 - Cornelius Retail Center

date: July 20, 2005

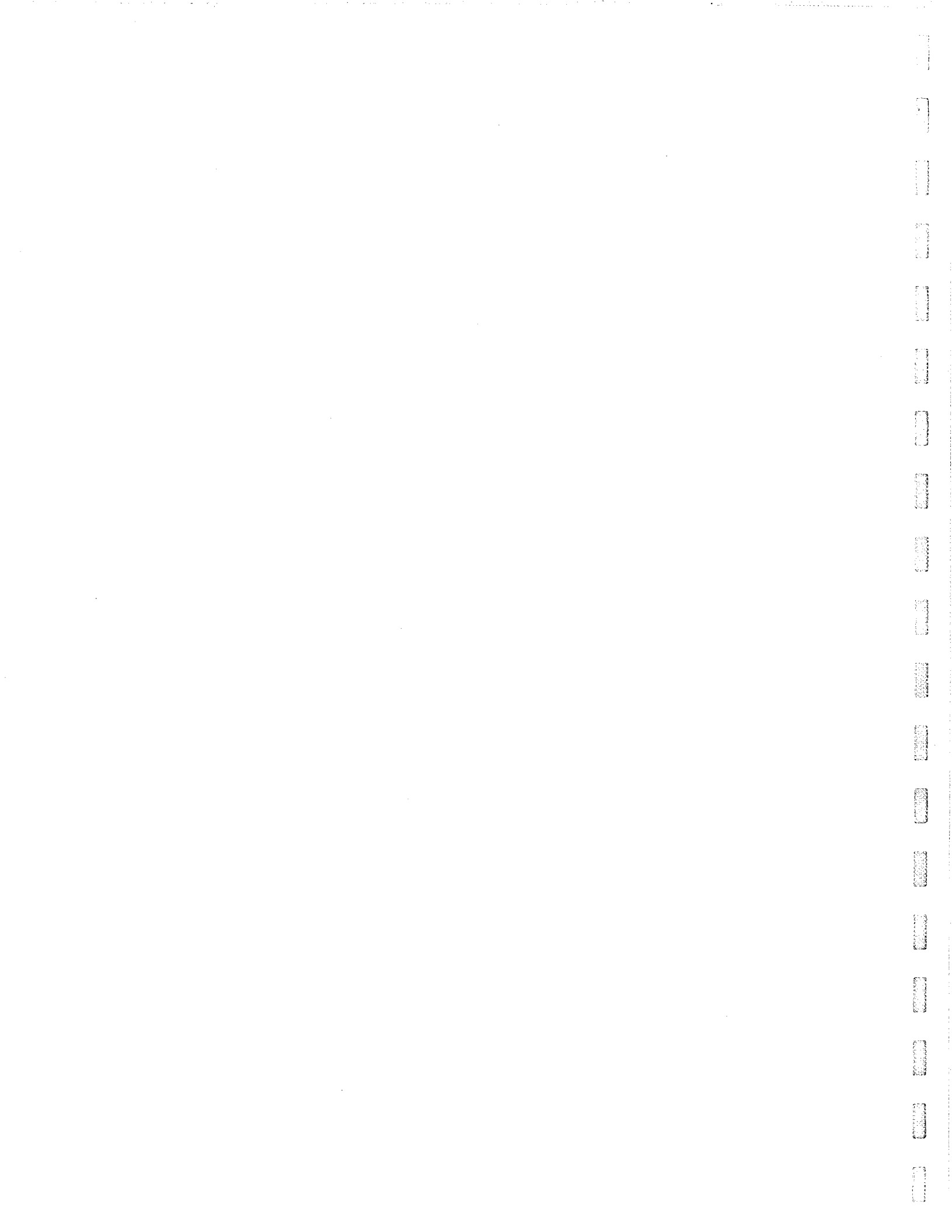
By: CBT

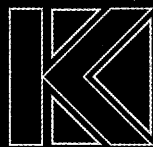
Calculation of Historical Growth Rate -- Appendix E

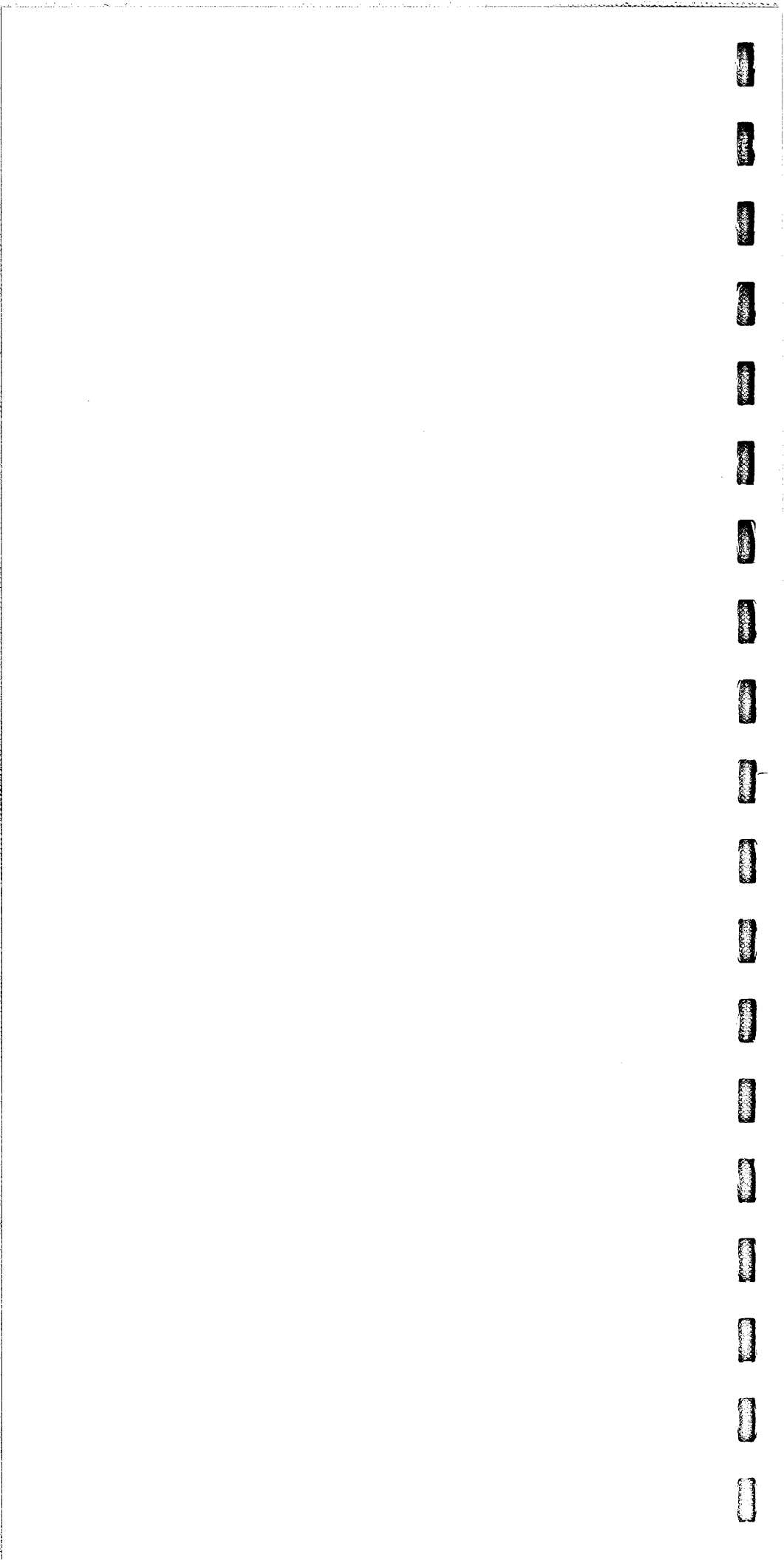
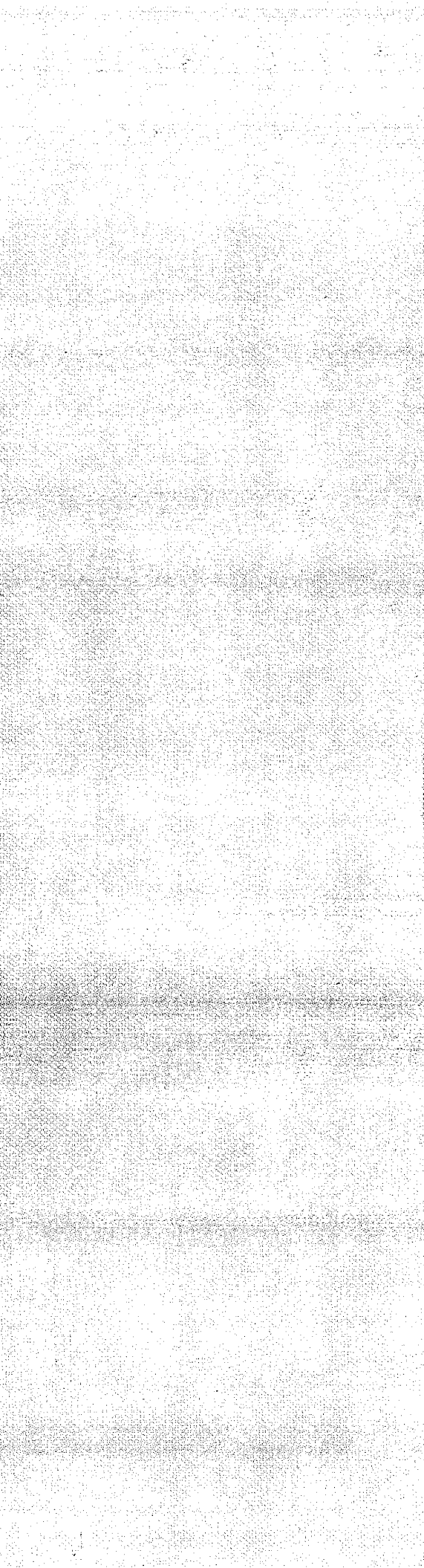
Year	North Adair Street west of North 4th Avenue	Baseline Street west of South 4th Avenue
1994	17,600	17,200
1995	18,300	17,900
1996	18,800	18,400
1997	16,000	16,300
1998	16,200	16,500
1999	16,700	16,700
2000	17,300	17,400
2001	17,700	17,800
2002	18,200	18,200
2003	19,500	19,100

AVERAGE GROWTH PER YEAR (Directional)	1.01	1.01
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OVERALL AVERAGE	1.01
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Appendix G

Year 2006 Background
Traffic Level-of-Service
Worksheets

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Scenario Report

Scenario: bkam
Command: bkam
Volume: bkam
Geometry: existing AM
Impact Fee: Default Impact Fee
Trip Generation: null
Trip Distribution: null
Paths: Default Paths
Routes: Default Routes
Configuration: bkam

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	LOS	Del/Veh	V/C	Base Del/Veh	Future Del/Veh	Change in
# 1 Pacific Ave/Mountain View Ln	B	14.3	0.690	B 14.3	14.2	0.699 -0.033 D/V
# 2 W Baseline St/4th Ave	B	10.1	0.605	B 10.1	10.2	0.615 + 0.044 D/V
# 3 W Baseline St/10th Ave	B	13.0	0.657	B 13.0	13.1	0.667 + 0.181 D/V
# 4 N Adair St/4th Ave	A	7.0	0.415	A 7.0	7.0	0.428 -0.057 D/V
# 5 N Adair St/10th Ave	B	11.1	0.428	B 11.1	11.2	0.444 + 0.041 D/V
# 6 N Holladay St/10th Ave	B	10.6	0.000	B 10.6	10.7	0.000 + 0.080 D/V
# 11 Pacific Ave/Quince St	C	33.1	0.681	C 33.1	33.1	0.681 + 0.000 D/V
# 15 W Baseline St/N Yew St	C	22.6	0.000	C 22.6	23.2	0.000 + 0.519 D/V
# 24 N Adair St/N Yew St	C	24.0	0.000	C 24.0	25.2	0.000 + 1.233 D/V
# 52 S 4th Ave/S Heather St	A	7.3	0.047	A 7.3	7.3	0.047 + 0.000 V/C
# 53 S 10th Ave/Dogwood St	B	11.2	0.000	B 11.2	11.2	0.000 + 0.000 D/V

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Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #1 Pacific Ave/Mountain View Ln

Cycle (sec): 100 Critical Vol./Cap. (X): 0.699
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 14.2
Optimal Cycle: 59 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0

Volume Module:

Base Vol: 114 0 118 0 0 0 1135 141 79 786 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 115 0 119 0 0 0 1146 142 80 794 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 22 0 0 34 0

Initial Fut: 115 0 119 0 0 0 1168 142 80 828 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84

PHF Volume: 137 0 142 0 0 0 1391 170 95 986 0

Reduced Vol: 137 0 142 0 0 0 1391 170 95 986 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 137 0 142 0 0 0 1391 170 95 986 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.90 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 1.78 0.22 1.00 2.00 0.00

Final Sat.: 1718 0 1537 0 0 0 2986 364 1671 3343 0

Capacity Analysis Module:

Vol/Sat: 0.08 0.00 0.09 0.00 0.00 0.00 0.47 0.47 0.06 0.29 0.00

Crit Moves: 0.13 0.00 0.13 0.00 0.00 0.00 0.67 0.67 0.08 0.75 0.00

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #2 W Baseline St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.615
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 10.2
Optimal Cycle: 38 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 0 0 1 0 1 1 0 1 0 0 0 0 1 0 1 0

Volume Module:

Base Vol: 0 73 103 38 43 0 13 1156 79 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 74 104 38 43 0 13 1168 80 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 74 104 38 43 0 13 1190 80 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88

PHF Volume: 0 84 118 44 49 0 15 1352 91 0 0 0

Reduced Vol: 0 84 118 44 49 0 15 1352 91 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 0 84 118 44 49 0 15 1352 91 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.81 0.96 0.90 0.90 0.90 0.90 0.77 0.77 0.81 0.81 0.81

Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat.: 0 1828 1543 1193 1712 0 32 2889 1535 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.05 0.08 0.04 0.03 0.00 0.47 0.47 0.06 0.00 0.00

Crit Moves: 0.00 0.12 0.12 0.12 0.12 0.12 0.76 0.76 0.76 0.00 0.00

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

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2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.681
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 33.1
Optimal Cycle: 66 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected Protected Protected
Rights: Protected Protected Protected Protected Protected Protected
Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 2 0 1

Volume Module:
Base Vol: 29 188 301 136 150 66 76 554 12 190 393 52
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 29 190 304 137 152 67 77 560 12 192 397 53
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserBVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 29 190 304 137 152 67 77 560 12 192 397 53
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85
PHF Volume: 34 223 358 162 178 78 90 658 14 226 467 62

Reduced Vol: 34 223 358 162 178 78 90 658 14 226 467 62
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 34 223 358 162 178 78 90 658 14 226 467 62

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.84 0.89 0.75 0.80 0.81 0.81 0.90 0.90 0.90 0.86 0.86 0.77
Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat.: 1597 1682 1429 1529 1066 469 1718 3354 73 1641 3281 1468

Capacity Analysis Module:
Vol/Sat: 0.02 0.13 0.25 0.11 0.17 0.17 0.05 0.20 0.20 0.14 0.14 0.04

Crit Moves: 0.04 0.19 0.40 0.16 0.31 0.31 0.13 0.29 0.00 0.20 0.36 0.36
Green/Cycle: 0.54 0.68 0.63 0.68 0.54 0.54 0.40 0.68 0.00 0.68 0.40 0.12

Volume/Cap: 56.0 43.1 26.6 47.8 29.8 29.8 40.9 33.5 0.0 42.6 24.3 21.6
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 56.0 43.1 26.6 47.8 29.8 29.8 40.9 33.5 0.0 42.6 24.3 21.6

HCM2Kavg: 2 8 10 6 7 7 3 10 52 8 6 1

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Basline St/N Yew St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C [23.2]
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 0 1 0 0 1 0 0 0 1 0 1 0 0 0 0 0

Volume Module:
Base Vol: 0 7 14 27 3 0 37 1204 12 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 7 14 27 3 0 37 1216 12 0 0 0
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 0 7 14 27 3 0 37 1238 12 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88

PHF Volume: 0 8 16 31 3 0 42 1407 14 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol.: 0 8 16 31 3 0 42 1407 14 0 0 0
Critical Gap Module:
Critical Gap: 6.6 6.3 7.2 6.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

FollowerTm: 4.0 3.3 3.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1
Capacity Module:
Conflict Vol: 710 792 1506 710 792 1506 710 792 1506 710 792 1506

Potent Cap.: 900 900 900 900 900 900 900 900 900 900 900 900
Move Cap.: 900 900 900 900 900 900 900 900 900 900 900 900

Volume/Cap: 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05
Level Of Service Module:
Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Stopped Del: 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2
LOS by Move: A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: 224 233 233 233 233 233 233 233 233 233 233 233

Shared Queue: 0.4 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
Shrd StpDel: 23.0 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2

Shared LOS: C C C C C C C C C C C C
ApproachDel: 23.0 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2 23.2

ApproachLOS: C C C C C C C C C C C C

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 N Adair St/N Yew St

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 2006 Background Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #52 S 4th Ave/S Heather St

bkam Tue Aug 23, 2005 14:21:48 Page 13-1

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

***** Intersection #53 S 10th Ave/Dogwood St *****

***** Average Delay (sec/veh): 1.8 Worst Case Level of Service: B [11.2] *****

***** Approach: North Bound South Bound East Bound West Bound *****

***** Movement: L - T - R L - T - R L - T - R L - T - R *****

***** Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled *****

***** Rights: Include Include Include Include *****

***** Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 *****

***** Volume Module: *****

Base Vol: 2 147 11 3 104 4 13 9 4 5 14 2

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 2 148 11 3 105 4 13 9 4 5 14 2

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 2 148 11 3 105 4 13 9 4 5 14 2

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87

PHF Volume: 2 171 13 3 121 5 15 10 5 6 16 2

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 2 171 13 3 121 5 15 10 5 6 16 2

Critical Gap Module: *****

Critical Gap: 4.2 xxx xxxxxx 4.3 xxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2

FollowUpTim: 2.3 xxx xxxxxx 2.4 xxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.3

***** Capacity Module: *****

Conflict Vol: 136 xxx xxxxxx 189 xxx xxxxxx 339 335 135 326 331 190

Potent Cap.: 1383 xxx xxxxxx 1294 xxx xxxxxx 619 589 919 631 592 857

Move Cap.: 1370 xxx xxxxxx 1288 xxx xxxxxx 593 578 910 613 581 848

Volume/Cap: 0.00 xxx xxxxxx 0.00 xxx xxxxxx 0.03 0.02 0.01 0.01 0.03 0.00

***** Level of Service Module: *****

Queue: 0.0 xxx xxxxxx 0.0 xxx xxxxxx 0.0 xxx xxxxxx 0.0 xxx xxxxxx

Stopped Del: 7.6 xxx xxxxxx 7.8 xxx xxxxxx 7.8 xxx xxxxxx 7.8 xxx xxxxxx

LOS by Move: A * A * A * A * A * A * A * A *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: xxx xxx xxxxxx xxx xxx xxxxxx xxx 620 xxxxxx xxx 607 xxxxxx

SharedQueue: xxxxxx xxx xxx xxxxxx xxxxxx 0.2 xxxxxx xxxxxx 0.1 xxxxxx

Shrd StpDel: xxxxxx xxx xxx xxxxxx xxxxxx 11.1 xxxxxx xxxxxx 11.2 xxxxxx

Shared LOS: * * * * * B B

ApproachDel: xxxxxx 11.1 11.2

ApproachLOS: B B

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Traffic Conditions -- Weekday PM Peak Hour

Scenario Report

Scenario: bkpm

Command: bkpm
 Volume: bkpm
 Geometry: existing PM
 Impact Fee: Default Impact Fee
 Trip Generation: null
 Trip Distribution: null
 Paths: Default Paths
 Routes: Default Routes
 Configuration: bkpm

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Traffic Conditions -- Weekday PM Peak Hour

Impact Analysis Report
 Level Of Service

Intersection	Base LOS Veh C	Del/ V/ C	Future Del/ V/ C	Change in
# 1 Pacific Ave/Mountain View Ln	B 12.2	0.649	B 12.3	0.677 + 0.084 D/V
# 2 W Baseline St/4th Ave	B 10.9	0.653	B 11.2	0.688 + 0.308 D/V
# 3 W Baseline St/10th Ave	B 14.0	0.686	B 14.4	0.719 + 0.401 D/V
# 4 N Adair St/4th Ave	A 8.0	0.668	A 8.2	0.684 + 0.163 D/V
# 5 N Adair St/10th Ave	B 13.6	0.721	B 13.8	0.738 + 0.224 D/V
# 6 N Holladay St/10th Ave	B 10.8	0.000	B 10.8	0.000 + 0.000 D/V
# 11 Pacific Ave/Quince St	D 36.4	0.854	D 36.4	0.854 + 0.000 D/V
# 15 W Baseline St/N Yew St	F 54.9	0.000	F 69.9	0.000 +14.950 D/V
# 24 N Adair St/N Yew St	F OVRFL	0.000	F OVRFL	0.000 + 0.000 D/V
# 52 S 4th Ave/S Heather St	A 7.4	0.107	A 7.4	0.107 + 0.000 V/C
# 53 S 10th Ave/Dogwood St	B 12.5	0.000	B 12.5	0.000 + 0.000 D/V

bkpm Tue Aug 23, 2005 14:21:55 Page 3-1

Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

 Intersection #1 Pacific Ave/Mountain View Ln
 Cycle (sec): 100 Critical Vol./Cap. (X): 0.677
 Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 12.3
 Optimal Cycle: 56 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected
 Rights: Include Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0
 Lanes: 1 0 0 0 1 0 0 0 0 0 0 1 0 2 0 0

Volume Module:

Base Vol:	126	0	82	0	0	0	1304	94	118	1565	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	127	0	83	0	0	0	1317	95	119	1581	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0
In-Process:	0	0	0	0	0	0	85	0	47	0	0
Initial Fut:	127	0	83	0	0	0	1402	95	119	1628	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	134	0	87	0	0	0	1476	100	125	1713	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	134	0	87	0	0	0	1476	100	125	1713	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol:	134	0	87	0	0	0	1476	100	125	1713	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.84	1.00	1.00	1.00	0.92	0.92	0.92	0.92	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.87	0.13	1.00	2.00	0.00
Final Sat:	1787	0	1599	0	0	0	3284	222	1753	3505	0

Capacity Analysis Module:

Vol/Sat:	0.07	0.00	0.05	0.00	0.00	0.00	0.45	0.45	0.07	0.49	0.00
Crit Moves:	0.11	0.00	0.11	0.00	0.00	0.00	0.66	0.66	0.11	0.77	0.00
Green/Cycle:	0.68	0.00	0.49	0.00	0.00	0.00	0.68	0.68	0.68	0.64	0.00
Volume/Cap:	51.8	0.0	44.0	0.0	0.0	0.0	11.1	11.1	52.7	5.7	0.0
Delay/Veh:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
User DelAdj:	51.8	0.0	44.0	0.0	0.0	0.0	11.1	11.1	52.7	5.7	0.0
AdjDel/Veh:	6	0	3	0	0	0	15	15	5	12	0
HCM2kAvg:	6	0	3	0	0	0	15	15	5	12	0

bkpm Tue Aug 23, 2005 14:21:55 Page 4-1

Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

 Intersection #2 W Baseline St/4th Ave
 Cycle (sec): 70 Critical Vol./Cap. (X): 0.688
 Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 11.2
 Optimal Cycle: 44 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
 Rights: Include Include Include Include
 Min. Green: 0 0 1 0 1 0 0 0 0 0 0 0
 Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 0 0 0

Volume Module:

Base Vol:	0	73	75	44	126	0	21	1368	93	0	0
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	0	74	76	44	127	0	21	1382	94	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0
In-Process:	0	0	0	0	0	0	0	85	0	0	0
Initial Fut:	0	74	76	44	127	0	21	1467	94	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	0	79	81	48	137	0	23	1577	101	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	79	81	48	137	0	23	1577	101	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol:	0	79	81	48	137	0	23	1577	101	0	0

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.84	0.70	1.00	1.00	0.78	0.78	0.83	1.00	1.00
Lanes:	0.00	1.00	1.00	1.00	1.00	1.00	0.03	1.97	1.00	0.00	0.00
Final Sat:	0	1900	1593	1323	1900	0	42	2937	1568	0	0

Capacity Analysis Module:

Vol/Sat:	0.00	0.04	0.05	0.04	0.07	0.00	0.54	0.54	0.06	0.00	0.00
Crit Moves:	0.00	0.10	0.10	0.10	0.10	0.00	0.78	0.78	0.08	0.00	0.00
Green/Cycle:	0.00	0.40	0.49	0.34	0.69	0.00	0.69	0.69	0.08	0.00	0.00
Volume/Cap:	0.0	35.1	39.4	35.8	47.9	0.0	5.3	5.3	1.9	0.0	0.0
Delay/Veh:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
User DelAdj:	0.0	35.1	39.4	35.8	47.9	0.0	5.3	5.3	1.9	0.0	0.0
AdjDel/Veh:	0	2	2	2	4	0	11	11	1	0	0
HCM2kAvg:	0	2	2	2	4	0	11	11	1	0	0

bkpm	Tue Aug 23, 2005 14:21:55	-- Project # 7059 Cornelius Wal-Mart -- Cornelius, Oregon	Page 5-1
Kittelson & Associates, Inc.			
Cornelius Wal-Mart -- Cornelius, Oregon			
2006 Background Traffic Conditions -- Weekday PM Peak Hour			
Level of Service Computation Report			
2000 HCM Operations Method (Future Volume Alternative)			
Intersection #3 W Baseline St/10th Ave			
Cycle (sec):	70	Critical Vol./Cap. (X):	0.719
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	14.4
Optimal Cycle:	47	Level Of Service:	B
Approach: North Bound South Bound East Bound West Bound			
Movement:	L - T - R	L - T - R	L - T - R
Control:	Permitted Include	Permitted Include	Permitted Include
Rights:			
Min. Green:	0 0 1 0 1	0 0 0 0 0 0 1 0 1	0 0 0 0 0
Lanes:			
Volume Module:			
Base Vol:	0 125 91 93 201	0 94 1337 77	0 0 0
Growth Adj:	1.01 1.01 1.01 1.01 1.01	1.01 1.01 1.01	1.01 1.01 1.01
Initial Bse:	0 126 92 94 203	0 95 1350 78	0 0 0
Added Vol:	0 0 0 0 0	0 0 0 0 0	0 0 0
In-Process:	0 0 0 0 0	0 85 0 0 0	0 0 0
Initial Fut:	0 126 92 94 203	0 95 1435 78	0 0 0
User Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
PHF Adj:	0.97 0.97 0.97 0.97 0.97	0.97 0.97 0.97	0.97 0.97 0.97
PHF Volume:	0 130 95 97 209	0 98 1480 80	0 0 0
Reduct Vol:	0 0 0 0 0	0 0 0 0 0	0 0 0
Reduced Vol:	0 130 95 97 209	0 98 1480 80	0 0 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
MLF Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Final Vol.:	0 130 95 97 209	0 98 1480 80	0 0 0
Saturation Flow Module:			
Sat/Lane:	1900 1900 1900 1900 1900	1900 1900 1900	1900 1900 1900
Adj Adjustment:	1.00 0.99 0.84 0.62 0.98	1.00 0.79 0.79	0.83 1.00 1.00 1.00
Lanes:	0.00 1.00 1.00 1.00 1.00	0.00 0.12 1.88	0.00 0.00 0.00 0.00
Final Sat.:	0 1881 1593 1173 1862	0 187 2821 1575	0 0 0
Capacity Analysis Module:			
Vol/Sat:	0.00 0.07 0.06	0.08 0.11 0.00	0.52 0.52 0.05 0.00 0.00 0.00
Crit Moves:		****	****
Green/Cycle:	0.00 0.16 0.16	0.00 0.16 0.16	0.73 0.73 0.73 0.00 0.00 0.00
Volume/Cap:	0.00 0.44 0.38	0.00 0.53 0.72	0.00 0.72 0.72 0.07 0.00 0.00 0.00
Delay/Veh:	0.0 31.5 30.9	37.6 42.3 0.0	7.5 7.5 2.8 0.0 0.0 0.0
User DelAdj:	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00
IdelDel/Veh:	0.0 31.5 30.9	37.6 42.3 0.0	7.5 7.5 2.8 0.0 0.0 0.0
ICM2Avg:	0 3 2 4 6	0 13 13 1	0 0 0 0 0 0

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Tue Aug 23, 2005 14:21:55

Page 6-1

Kittelson & Associates, Inc. -- Project # 7059

Cornelius Wal-Mart -- Cornelius, Oregon

2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 N Adair St/4th Ave

Cycle (sec): 70

Loss Time (sec): 8 (Y+R = 4 sec)

Optimal Cycle: 44

Level of Service: A

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 1 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0

Volume Module:

Base Vol: 72 20 0 30 43

Growth Adj: 1.01 1.01 1.01 1.01 1.01

Initial Bse: 73 20 0 30 43

Added Vol: 0 0 0 0 0

In-Process: 0 0 0 0 0

In-Fut: 73 20 0 30 43

User Adj: 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93

PHF Volume: 78 22 0 33 47

Reduced Vol: 0 0 0 0 0

Reduced Vol: 78 22 0 33 47

PCE Adj: 1.00 1.00 1.00 1.00 1.00

WLF Adj: 1.00 1.00 1.00 1.00 1.00

Final Vol: 78 22 0 33 47

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900

Adj Sat: 0.85 1.00 1.00 0.91 1.00

Lanes: 1.00 1.00 0.00 0.41 0.59

Final Sat: 1570 1900 0 713 1022

Capacity Analysis Module:

Vol/Sat: 0.05 0.01 0.00 0.05 0.05

Crit Moves: 0.07 0.07 0.00 0.07 0.07

Green/Cycle: 0.68 0.16 0.00 0.63 0.63

Volume/Cap: 60.0 32.8 0.0 52.8 52.8

Delay/Veh: 1.00 1.00 1.00 1.00 1.00

User Del Adj: 60.0 32.8 0.0 52.8 52.8

Del/Veh: 3 1 0 3 3

HCM2K Avg: 10 10 10 10 10

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.738
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.8
Optimal Cycle: 50 Level of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 1 0

Volume Module: 85 129 0 0 147 93 0 0 0 144 1628 66

Base Vol: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Bse: 0 0 0 0 0 0 0 0 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 86 130 0 0 148 94 0 0 0 145 1691 67

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96

PHF Volume: 89 136 0 0 155 98 0 0 0 152 1762 69

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 89 136 0 0 155 98 0 0 0 152 1762 69

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.51 0.99 1.00 1.00 0.97 0.80 1.00 1.00 1.00 0.93 0.93 0.93

Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 0.15 1.78 0.07

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Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 N Holladay St/10th Ave

Average Delay (sec/veh): 2.2 Worst Case Level of Service: B [10.8]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled

Rights: Include Include Include Include

Lanes: 0 1 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0

Volume Module: 18 95 0 0 124 35 22 0 33 0 0 0

Base Vol: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 18 96 0 0 125 35 22 0 33 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 18 96 0 0 125 35 22 0 33 0 0 0

Initial Fut: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69

PHF Adj: 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69

PHF Volume: 26 139 0 0 182 51 32 0 48 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 26 139 0 0 182 51 32 0 48 0 0 0

Critical Gap Module:

Critical Gap: 4.1 xxxxx xxxxx xxxxx xxxxx 6.5 xxxxx 6.3 xxxxx xxxxx xxxxx

Followup Time: 2.2 xxxxx xxxxx xxxxx xxxxx 3.6 xxxxx 3.4 xxxxx xxxxx xxxxx

Capacity Module:

Conflict Vol: 237 xxxxx xxxxx xxxxx xxxxx 403 xxxxx 211 xxxxx xxxxx xxxxx

Potent Cap: 1319 xxxxx xxxxx xxxxx xxxxx 592 xxxxx 814 xxxxx xxxxx xxxxx

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Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.854
Loss Time (sec): 16 (V+R = 4 sec) Average Delay (sec/veh): 36.4
Optimal Cycle: 101 Level Of Service: D

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected Protected Protected
Rights: Ovl Include Widebypass Include Include
Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 1 0 1 0 2 0 1
Volume Module:
Base Vol: 64 166 317 127 224 115 120 825 52 362 958 136
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 65 168 320 128 226 116 121 833 53 366 968 137
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 65 168 320 128 226 116 121 833 53 366 968 137
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99
PHF Volume: 65 169 323 130 229 117 122 842 53 369 977 139
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 65 169 323 130 229 117 122 842 53 369 977 139
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 65 169 323 130 229 117 122 842 53 369 977 139
Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.86 0.91 0.77 0.87 0.87 0.87 0.91 0.91 0.91 0.93 0.93 0.83
Lanes: 1.00 1.00 1.00 1.00 0.66 0.34 1.00 1.88 0.12 1.00 2.00 1.00
Final Sat: 1641 1727 1468 1655 1093 561 1736 3238 204 1769 3538 1583
Capacity Analysis Module:
Vol/Sat: 0.04 0.10 0.22 0.08 0.21 0.21 0.07 0.26 0.26 0.21 0.28 0.09
Crit Moves: ****
Green/Cycle: 0.05 0.16 0.41 0.13 0.24 0.24 0.11 0.30 0.00 0.24 0.44 0.44
Volume/Cap: 0.85 0.61 0.54 0.61 0.85 0.85 0.63 0.85 xxx 0.85 0.63 0.20
Delay/Veh: 104.1 42.7 23.6 46.0 52.1 52.1 49.1 39.7 0.0 51.3 22.8 17.5
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 104.1 42.7 23.6 46.0 52.1 52.1 49.1 39.7 0.0 51.3 22.8 17.5
HCM2Kavg: 4 6 8 5 13 13 5 16 69 14 12 3

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Baseline St/N Yew St

Average Delay (sec/veh): 5.6 Worst Case Level Of Service: F [69.9]

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Uncontrolled Uncontrolled
Rights: Include Include Include Include
Lanes: 0 0 0 1 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0
Volume Module:
Base Vol: 0 17 17 88 19 0 28 1331 27 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 0 17 17 89 19 0 28 1344 27 0 0 0
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 0 17 17 89 19 0 28 1429 27 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90
PHF Volume: 0 19 19 99 21 0 31 1588 30 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol: 0 19 19 99 21 0 31 1588 30 0 0 0
Critical Gap Module:
Critical Gap: 6.5 6.2 7.1 6.5 xxxxx 4.1 xxxxx xxxxx xxxxx xxxxx
FollowUpTm: 4.0 3.3 3.5 4.0 xxxxx 2.2 xxxxx xxxxx xxxxx xxxxx
Capacity Module:
Conflict Vol: 817 1693 817 887 1708 xxxxx 20 xxxxx xxxxx xxxxx xxxxx
Potent Cap: 94 379 266 91 xxxxx 1590 xxxxx xxxxx xxxxx xxxxx
Move Cap: 90 377 204 88 xxxxx 1563 xxxxx xxxxx xxxxx xxxxx
Volume/Cap: 0.21 0.05 0.48 0.24 xxxxx 0.02 xxxxx xxxxx xxxxx xxxxx
Level Of Service Module:
Queue: xxxxx xxxxx xxxxx xxxxx xxxxx 0.1 xxxxx xxxxx xxxxx xxxxx
Stopped Del: xxxxx xxxxx xxxxx xxxxx xxxxx 7.4 xxxxx xxxxx xxxxx xxxxx
LOS by Move: * * * * * A * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap: xxxxx xxxxx 145 165 xxxxx xxxxx 0.1 xxxxx xxxxx xxxxx
Shared Queue: xxxxx xxxxx 1.0 4.5 xxxxx xxxxx 0.1 xxxxx xxxxx xxxxx
Shrd StpDel: xxxxx xxxxx 38.4 69.9 xxxxx xxxxx 7.4 xxxxx xxxxx xxxxx
Shared LOS: * * * * * E F 69.9 A * * * * *
ApproachDel: 38.4 E F 69.9 F xxxxxx
ApproachLOS: E

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2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): OVERFLOW Worst Case Level of Service: F[XXXXX]
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 1 0

Volume Module:
Base Vol: 22 11 0 0 87 27 0 0 0 0 27 1616 79
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 22 11 0 0 88 27 0 0 0 0 27 1632 80
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 22 11 0 0 88 27 0 0 0 0 27 1679 80
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
PHF Volume: 24 12 0 0 96 30 0 0 0 0 30 1825 87
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol: 24 12 0 0 96 30 0 0 0 0 30 1825 87
Critical Gap Module:
Critical Gap: 7.1 6.5 xxxxx xxxxx 6.5 6.2 xxxxx xxxxx xxxxx 4.1 xxxxx xxxxx
FollowUpTm: 3.5 4.0 xxxxx xxxxx 4.0 3.3 xxxxx xxxxx xxxxx 2.2 xxxxx xxxxx

Capacity Module:
Conflict Vol: 1021 1977 xxxxx xxxxx 1934 961 xxxxx xxxxx xxxxx 1 xxxxx xxxxx
Potent Cap.: 217 63 xxxxx xxxxx 65 310 xxxxx xxxxx xxxxx 1622 xxxxx xxxxx
Move Cap.: 0 61 xxxxx xxxxx 64 308 xxxxx xxxxx xxxxx 1620 xxxxx xxxxx
Volume/Cap: xxx 0.20 xxx 1.50 0.10 xxx xxx xxx xxx 0.02 xxx xxx

Level of Service Module:
Queue: xxxxx xxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.1 xxxxx xxxxx
Stopped Del: xxxxx xxx xxxxx xxxxx xxxxx xxxxx xxxxx 7.3 xxxxx xxxxx
LOS by Move: * * * * * * * * * * A * * * * *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap.: 0 xxx xxxxx xxxxx xxxxx 79 xxx xxxxx xxxxx xxxxx xxxxx
SharedQueue: xxxxx xxx xxxxx xxxxx 10.3 xxxxx xxxxx xxxxx xxxxx
Shrd StpDel: xxxxx xxx xxxxx xxxxx 408.6 xxxxx xxxxx xxxxx xxxxx
Shared LOS: * * * * * * * * * * A * * * * *
ApproachDel: xxxxx F 408.6 F xxxxx
ApproachLOS: F

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)
Intersection #52 S 4th Ave/S Heather St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.107
Lost Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 7.4
Optimal Cycle: 0 Level Of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Min. Green: 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0

Lanes: 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0
Volume Module:
Base Vol: 9 31 2 9 52 22 9 14 10 1 28 7
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 9 31 2 9 53 22 9 14 10 1 28 7
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 9 31 2 9 53 22 9 14 10 1 28 7
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88
PHF Volume: 10 36 2 10 60 25 10 16 11 1 32 8
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol: 10 36 2 10 60 25 10 16 11 1 32 8
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 10 36 2 10 60 25 10 16 11 1 32 8

Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes: 0.21 0.74 0.05 0.11 0.63 0.26 0.27 0.43 0.30 0.03 0.78 0.19
Final Sat.: 181 625 40 96 556 235 229 356 254 23 653 163

Capacity Analysis Module:
Vol/Sat: 0.06 0.06 0.06 0.11 0.11 0.11 0.05 0.05 0.05 0.05 0.05 0.05
Crit Moves: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
LOS by Move: A A A A A A A A A A A A
ApproachDel: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
Delay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
ApprAdjDel: 7.4 7.4 7.4 7.4 7.4 7.4 7.3 7.3 7.3 7.4 7.4 7.4
LOS by Appr: A A A A A A A A A A A A

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 2006 Background Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
 2000 HCM Unsignalized Method (Future Volume Alternative)

 Intersection #53 S 10th Ave/Dogwood St.

Average Delay (sec/veh): 1.9 Worst Case Level Of Service: B [12.5]

 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled Stop Sign
 Rights: Include Include Include Include Include
 Lanes: 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0

Volume Module:
 Base Vol: 3 183 10 13 168 27 14 9 3 5 20 9
 Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
 Initial Bse: 3 185 10 13 170 27 14 9 3 5 20 9
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 3 185 10 13 170 27 14 9 3 5 20 9
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91
 PHF Volume: 3 203 11 14 186 30 16 10 3 6 22 10
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol: 3 203 11 14 186 30 16 10 3 6 22 10
 Critical Gap Module:
 Critical Gap: 4.1 xxx xxxxxx 4.2 xxx xxxxxx 7.1 6.5 6.2 7.1 6.5 6.2
 FollowUpTm: 2.2 xxx xxxxxx 2.3 xxx xxxxxx 3.5 4.0 3.3 3.5 4.0 3.5

Capacity Module:
 Conflict Vol: 219 xxx xxxxxx 467 459 204 457 469 216
 Potent Cap.: 1332 xxx xxxxxx 1315 xxx xxxxxx 510 502 841 517 495 829
 Move Cap.: 1329 xxx xxxxxx 1310 xxx xxxxxx 479 491 839 500 485 824
 Volume/Cap: 0.00 xxx xxxxxx 0.01 xxx xxxxxx 0.03 0.02 0.00 0.01 0.05 0.01

Level Of Service Module:
 Queue: 0.0 xxx xxxxxx 0.0 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
 Stopped Del: 7.7 xxx xxxxxx 7.8 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
 LOS by Move: A * A * A * A * A * A * A * A *
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap.: xxx xxx xxxxxx xxx xxx xxxxxx xxx 509 xxxxxx xxx 547 xxxxxx
 Shared Queue: xxx xxx xxxxxx xxx xxx xxxxxx xxx 12.5 xxxxxx xxx 12.1 xxxxxx
 Shrd StpDel: xxx xxx xxxxxx xxx xxx xxxxxx xxx 12.5 xxxxxx xxx 12.1 xxxxxx
 Shared LOS: * * * * *
 ApproachDel: xxxxxx
 ApproachLOS: B

Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Scenario Report

Scenario: bksa

Command:

bksa

Volume:

bksa

Geometry:

existing SAT

Impact Fee:

Default Impact Fee

Trip Generation:

null

Trip Distribution:

null

Paths:

Default Paths

Routes:

Default Routes

Configuration:

bksa

Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Impact Analysis Report
Level Of Service

Intersection	LOS	Del/ Veh	V/ C	Base Del/ Veh	Future Del/ Veh	Change in
# 1 Pacific Ave/Mountain View Ln	B	10.4	0.619	B 10.4	0.643	+ 0.018 D/V
# 2 W Baseline St/4th Ave	A	9.9	0.594	B 10.1	0.620	+ 0.237 D/V
# 3 W Baseline St/10th Ave	B	13.1	0.619	B 13.4	0.645	+ 0.243 D/V
# 4 N Adair St/4th Ave	A	7.4	0.514	A 7.4	0.527	-0.003 D/V
# 5 N Adair St/10th Ave	B	11.1	0.550	B 11.1	0.563	+ 0.021 D/V
# 6 N Holladay St/10th Ave	A	9.6	0.000	A 9.6	0.000	+ 0.000 D/V
# 11 Pacific Ave/Quince St	C	28.3	0.677	C 28.3	0.677	+ 0.000 D/V
# 15 W Baseline St/N Yew St	D	34.1	0.000	E 38.2	0.000	+ 4.019 D/V
# 24 N Adair St/N Yew St	E	40.2	0.000	E 43.4	0.000	+ 3.241 D/V

bksa	Tue Aug 23, 2005 14:22:11	Page 4-1							

Kittelson & Associates, Inc. -- Project #7059									
Cornelius Wal-Mart -- Cornelius, Oregon									
2006 Background Traffic Conditions -- Saturday Midday Peak Hour									

Level of Service Computation Report									
2000 HCM Operations Method (Future Volume Alternative)									

Intersection #2 W Baseline St/4th Ave									

Cycle (sec):	70	Critical Vol./Cap. (X):		0.620					
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):		10.1					
Optimal Cycle:	38	Level Of Service:		B					

Approach:	North Bound	South Bound	East Bound	West Bound					
Movement:	L - T - R	L - T - R	L - T - R	L - T - R	L - T - R				
Control:	Permitted	Permitted	Permitted	Permitted	Permitted				
Rights:	Include	Include	Include	Include	Include				
Min. Green:	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0				
Lanes:	0 0 1 1	1 0 1 0	0 1 0 1	0 0 0 0	0 0 0 0				

Volume Module:									
Base Vol:	0 71 61 36 70	0 40 1319	75	0 0					
Growth Adj:	1.01 1.01 1.01 1.01 1.01	1.01 1.01 1.01	1.01 1.01 1.01	1.01 1.01 1.01					
Initial Bse:	0 72 62 36 71	0 40 1332	76	0 0					
Added Vol:	0 0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0					
In-Process:	0 0 0 0 0	0 0 67	0 0 0 0	0 0 0 0					
Initial Fut:	0 72 62 36 71	0 40 1399	76	0 0					
User Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00					
PHF Adj:	0.95 0.95 0.95 0.95 0.95	0.95 0.95 0.95	0.95 0.95 0.95	0.95 0.95 0.95					
PHF Volume:	0 75 65 38 74	0 43 1473	80	0 0					
Reduct Vol:	0 0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0					
Reduced Vol:	0 75 65 38 74	0 43 1473	80	0 0					
PCE Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00					
MLF Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00					
Final Vol.:	0 75 65 38 74	0 43 1473	80	0 0					

Saturation Flow Module:									
Sat/Lane:	1900 1900	1900 1900	1900 1900	1900 1900					
Adj/Justment:	1.00 0.97 0.81 0.83 0.97	1.00 0.78 0.78	0.82 1.00 1.00	1.00 1.00 1.00					
Lanes:	0.00 1.00 1.00 1.00 1.00	0.00 0.06 1.94	1.00 1.00 0.00 0.00	0.00					
Final Sat.:	0 1845 1540 1572 1845	0 84 2896	1567	0 0					

Capacity Analysis Module:									
Vol/Sat:	0.00 0.04 0.04	0.02 0.04	0.00 0.51 0.51	0.05 0.00 0.00 0.00					
Crit Moves:	0.00 1.00	0.00 0.82 0.82	0.82 0.00 0.00 0.00	0.00					
Green/Cycle:	0.00 0.07 0.07 0.07 0.07	0.00 0.82 0.62	0.82 0.00 0.00 0.00	0.00					
Volume/Cap:	0.00 0.62 0.64 0.37 0.61	0.00 0.62 0.62	0.00 0.00 0.00 0.00	0.00					
Delay/Veh:	0.0 53.3 58.8 41.1 52.6	0.0 3.5 3.5	1.3 0.0 0.0 0.0	0.0					
User Del/Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	1.00					
Adj Del/Veh:	0.0 53.3 58.8 41.1 52.6	0.0 3.5 3.5	1.3 0.0 0.0 0.0	0.0					
ICM2K Avg:	0 3 3 1 3	0 8 8	0 0 0 0	0					

bksa	Tue Aug 23, 2005 14:22:11	Project #7059	Page 3-1
Kittelson & Associates, Inc. -- Project #7059 Cornelius Wal-Mart -- Cornelius, Oregon 2006 Background Traffic Conditions -- Saturday Midday Peak Hour			
Level of Service Computation Report			
2000 HCM Operations Method (Future Volume Alternative)			
Intersection #1 Pacific Ave/Mountain View Ln			

Cycle (sec):	100	Critical Vol./Cap. (X):	0.643
Loss Time (sec):	12 (Y+R = 4 sec)	Average Delay (sec/veh):	10.4
Optimal Cycle:	53	Level Of Service:	B

Approach:	North Bound	South Bound	East Bound
Movement:	L - T - R	L - T - R	L - T - R
Control:	Split Phase	Split Phase	Protected
Right:	Include	Include	Include
Min. Green:	0	0	0
Lanes:	1 0 0 0 1	0 0 0 0 0	0 0 1 0 0

Volume Module:	64	0	0
Base Vol:	1.01	1.01	1.01
Growth Adj:	1.01	1.01	1.01
Initial Bse:	65	0	0
Added Vol:	0	0	0
In-Process:	0	0	0
Initial Fut:	65	0	0
User Adj:	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91
PHF Volume:	71	0	0
Reduct Vol:	0	0	0
Reduced Vol:	71	0	0
PCE Adj:	1.00	1.00	1.00
WLF Adj:	1.00	1.00	1.00
Final Vol:	71	0	0

Saturation Flow Module:	1900	1900	1900
Sat/Lane:	1900	1900	1900
AdjJustment:	0.95	1.00	1.00
Lanes:	1.00	0.00	0.00
Final Sat:	1805	0	0

Capacity Analysis Module:	0.04	0.00	0.07
Crit Moves:	0.11	0.00	0.11
Green/Cycle:	0.35	0.00	0.64
Volume/Cap:	42.2	0.0	50.3
Delay/Veh:	1.00	1.00	1.00
Vol DelAdj:	42.2	0.0	50.3
AdjDel/Veh:	2	0	5
CM2Kavg:	8	0	14

Kittelston & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #3 W Baseline St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.645
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.4
Optimal Cycle: 40 Level of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 1 0 1 0 0 0 0 0

Volume Module:
Base Vol: 0 105 110 74 136 0 85 1266 36 0 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 0 106 111 75 137 0 86 1279 36 0 0 0 0
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 0 106 111 75 137 0 86 1346 36 0 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97
PHF Volume: 0 109 115 77 142 0 89 1387 37 0 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 0 109 115 77 142 0 89 1387 37 0 0 0 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 1.00 0.97 0.82 0.66 0.98 1.00 0.78 0.78 0.82 1.00 1.00 1.00
Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.12 1.88 1.00 0.00 0.00 0.00
Final Sat: 0 1845 1554 1262 1862 0 179 2800 1557 0 0 0 0

Capacity Analysis Module:
Vol/Sat: 0.00 0.06 0.07 0.06 0.08 0.00 0.50 0.50 0.02 0.00 0.00 0.00
Crit Moves: 0.00 0.12 0.12 0.12 0.12 0.00 0.77 0.77 0.77 0.00 0.00 0.00
Green/Cycle: 0.00 0.50 0.63 0.52 0.65 0.00 0.65 0.65 0.03 0.00 0.00 0.00
Volume/Cap: 0.00 37.0 44.5 41.3 43.2 0.0 5.2 5.2 2.0 0.0 0.0 0.0
Delay/Veh: 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 0.00 37.0 44.5 41.3 43.2 0.0 5.2 5.2 2.0 0.0 0.0 0.0
HCM2kAvg: 0 3 4 3 4 0 10 10 0 0 0 0

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Kittelston & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #4 N Adair St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.527
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 7.4
Optimal Cycle: 32 Level of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0

Volume Module:
Base Vol: 80 29 0 0 20 27 0 0 0 84 1167 19
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 81 29 0 0 20 27 0 0 0 85 1179 19
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 81 29 0 0 20 27 0 0 0 85 1216 19
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94
PHF Volume: 86 31 0 0 21 29 0 0 0 90 1293 20
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 86 31 0 0 21 29 0 0 0 90 1293 20

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 1.00 0.97 1.00 1.00 0.90 0.90 1.00 1.00 1.00 0.92 0.92 0.92
Lanes: 1.00 1.00 0.00 0.00 0.42 0.58 0.00 0.00 0.00 0.13 1.84 0.03
Final Sat: 1336 1845 0 0 727 982 0 0 0 224 3216 51

Capacity Analysis Module:
Vol/Sat: 0.06 0.02 0.00 0.00 0.03 0.03 0.00 0.00 0.00 0.40 0.40 0.40
Crit Moves: 0.12 0.12 0.00 0.00 0.12 0.12 0.00 0.00 0.00 0.76 0.76 0.76
Green/Cycle: 0.53 0.14 0.00 0.00 0.24 0.24 0.00 0.00 0.00 0.53 0.53 0.53
Volume/Cap: 40.5 28.7 0.0 0.0 30.5 30.5 0.0 0.0 0.0 4.0 4.0 4.0
Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 40.5 28.7 0.0 0.0 30.5 30.5 0.0 0.0 0.0 4.0 4.0 4.0
HCM2kAvg: 3 1 0 0 1 1 0 0 0 7 7 7

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Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.563

Loss Time (sec): 34 Average Delay (sec/veh): 11.1

Optimal Cycle: 34 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 1 0

Volume Module:

Base Vol: 85 109 0 0 106 60 0 0 0 95 1171 57

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 86 110 0 0 107 61 0 0 0 96 1183 58

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 86 110 0 0 107 61 0 0 0 96 1220 58

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Volume: 91 117 0 0 114 64 0 0 0 102 1298 61

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 91 117 0 0 114 64 0 0 0 102 1298 61

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.62 0.94 1.00 1.00 0.96 0.80 1.00 1.00 1.00 0.91 0.91 0.91

Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.14 1.78 0.08

Final Sat: 1183 1792 0 0 1828 1520 0 0 0 242 3076 145

Capacity Analysis Module:

Vol/Sat: 0.08 0.07 0.00 0.00 0.06 0.04 0.00 0.00 0.00 0.42 0.42 0.42

Crit Moves: ****

Green/Cycle: 0.14 0.14 0.00 0.00 0.14 0.00 0.00 0.00 0.00 0.75 0.75 0.75

Volume/Cap: 0.56 0.48 0.00 0.00 0.45 0.31 0.00 0.00 0.00 0.56 0.56 0.56

Delay/Veh: 41.7 34.4 0.0 0.0 33.7 31.1 0.0 0.0 0.0 4.7 4.7 4.7

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 41.7 34.4 0.0 0.0 33.7 31.1 0.0 0.0 0.0 4.7 4.7 4.7

HCM2KAVG: 4 3 0 0 3 2 0 0 0 7 7 7

Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 N Holladay St/10th Ave

Average Delay (sec/veh): 1.9 Worst Case Level of Service: A 9.61

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled

Rights: Include Include Include Include

Lanes: 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0

Volume Module:

Base Vol: 19 88 0 0 76 17 16 0 16 0 0 0 0 0 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 19 89 0 0 77 17 16 0 16 0 0 0 0 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 19 89 0 0 77 17 16 0 16 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Volume: 20 94 0 0 81 18 17 0 17 0 0 0 0 0 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 20 94 0 0 81 18 17 0 17 0 0 0 0 0 0 0 0

Critical Gap: 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

Critical Gap: 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2

Followup: 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5

Capacity Module:

Conflict Vol: 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103 103

Potent Cap: 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470 1470

Move Cap: 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466 1466

Volume/Cap: 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01

Level Of Service Module:

Queue: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Stopped Del: 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5

LOS by Move: A A A A A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 823 823 823 823 823 823 823 823 823 823 823 823 823 823 823 823

Shared Queue: 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Shrd StpDel: 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5

Shared LOS: A A A A A A A A A A A A A A A A

ApproachDel: 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6

ApproachLOS: A A A A A A A A A A A A A A A A

Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.677

Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 28.3

Optimal Cycle: 66 Level of Service: C

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected

Rights: Ovl Include Include Include

Lanes: 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 2 0 1

Volume Module:

Base Vol: 64 77 222 125 113 74 105 733 69 269 860 135

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 65 78 224 126 114 75 106 740 70 272 869 136

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 65 78 224 126 114 75 106 740 70 272 869 136

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 70 84 241 136 123 80 114 796 75 292 934 147

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 70 84 241 136 123 80 114 796 75 292 934 147

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.91 0.96 0.82 0.91 0.91 0.91 0.94 0.93 0.93 0.94 0.94 0.84

Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Sat: 1736 1828 1554 1736 1039 681 1787 3224 303 1787 3574 1599

Capacity Analysis Module:

Vol/Sat: 0.04 0.05 0.16 0.08 0.12 0.12 0.06 0.25 0.25 0.16 0.26 0.09

Crit Moves: ****

Green/Cycle: 0.06 0.09 0.33 0.15 0.17 0.17 0.12 0.36 0.00 0.24 0.49 0.49

Volume/Cap: 0.68 0.53 0.47 0.53 0.68 0.68 0.54 0.68 0.00 0.68 0.54 0.19

Delay/Veh: 62.7 47.2 27.4 41.5 44.7 44.7 44.1 28.2 0.0 38.6 18.1 14.6

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 62.7 47.2 27.4 41.5 44.7 44.7 44.1 28.2 0.0 38.6 18.1 14.6

HCM2kAvg: 4 3 6 5 7 7 4 12 68 10 10 3

Kittelson & Associates, Inc. -- Project #7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Basline St/N Yew St

Average Delay (sec/veh): 2.4 Worst Case Level of Service: E[38.2]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Uncontrolled Uncontrolled

Rights: Include Include Include Include

Lanes: 0 0 1 0 0 1 0 0 0 1 0 1 0 0 0 0 0

Volume Module:

Base Vol: 0 17 14 48 15 0 32 1359 19 0 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 17 14 48 15 0 32 1373 19 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 0 17 14 48 15 0 32 1440 19 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Volume: 0 18 15 52 16 0 34 1531 20 0 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 0 18 15 52 16 0 34 1531 20 0 0 0 0

Critical Gap Module:

Critical Gap: 6.5 6.2 7.1 6.5 4.0 4.1 6.5 4.0 4.1 6.5 4.0 4.1

FollowUpTime: 4.0 3.3 3.5 4.0 4.0 2.2 4.0 3.3 3.5 4.0 4.0 4.0

Capacity Module:

Conflict Vol: 776 1610 776 844 1621 776 844 1621 776 844 1621 776

Potent Cap: 104 396 104 396 104 396 104 396 104 396 104 396

Move Cap: 100 396 100 396 100 396 100 396 100 396 100 396

Volume/Cap: 0.04 0.18 0.04 0.23 0.16 0.04 0.23 0.16 0.04 0.23 0.16 0.04

Level of Service Module:

Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Stopped Del: 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2 9.2

LOS by Move: A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 151 174 151 174 151 174 151 174 151 174 151 174

SharedQueue: 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8

Shrd StpDel: 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5

Shared LOS: E E E E E E E E E E E E

ApproachDel: 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5 35.5

ApproachLOS: E E E E E E E E E E E E

bksa Tue Aug 23, 2005 14:22:11 Page 11-1

Kittelton & Associates, Inc. -- Project #7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Background Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report
 2000 HCM Unsignalized Method (Future Volume Alternative)

 Intersection #24 N Adair St/N Yew St
 Average Delay (sec/veh): 3.3 Worst Case Level Of Service: E[43.4]

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

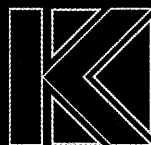
Control:	Stop Sign	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Rights:	Include	Include	Include	Include	Include
Lanes:	0 1 0 0 0	0 0 0 1 0	0 0 0 0 0	0 0 0 0 0	0 1 0 1 0
Volume Module:	27	19	0	41	23
Base Vol:	1.01	1.01	1.01	1.01	1.01
Growth Adj:	1.01	1.01	1.01	1.01	1.01
Initial Bse:	27	19	0	41	23
Added Vol:	0	0	0	0	0
In-Process:	0	0	0	0	0
Initial Fut:	27	19	0	41	23
User Adj:	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90
PHF Volume:	30	21	0	46	26
Reduct Vol:	0	0	0	0	0
Final Vol:	30	21	0	46	26
Critical Gap Module:	7.1	6.5	xxxxx	6.6	6.3
Critical Gp:	7.1	6.5	xxxxx	6.6	6.3
FollowUpTim:	3.5	4.0	xxxxx	4.1	3.4
Capacity Module:	777	1500	xxxxx	1475	725
Conflict Vol:	314	122	xxxxx	124	418
Potent Cap:	205	120	xxxxx	122	418
Move Cap:	0.15	0.18	xxxxx	0.38	0.06
Volume/Cap:	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Level Of Service Module:	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Queue:	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
Stopped Del:	xxxxx	xxxxx	xxxxx	xxxxx	xxxxx
LOS by Move:	*	*	*	*	*
Movement:	L - LTR - RT	L - LTR - RT	L - LTR - RT	L - LTR - RT	L - LTR - RT
Shared Cap:	158	xxxxx	xxxxx	163	xxxxx
Shared Queue:	1.3	xxxxx	xxxxx	2.0	xxxxx
Shrd StpDel:	38.4	xxxxx	xxxxx	43.4	xxxxx
Shared LOS:	E	*	*	E	*
ApproachDel:	38.4	43.4	xxxxx	xxxxx	xxxxx
ApproachLOS:	E	E	*	*	*

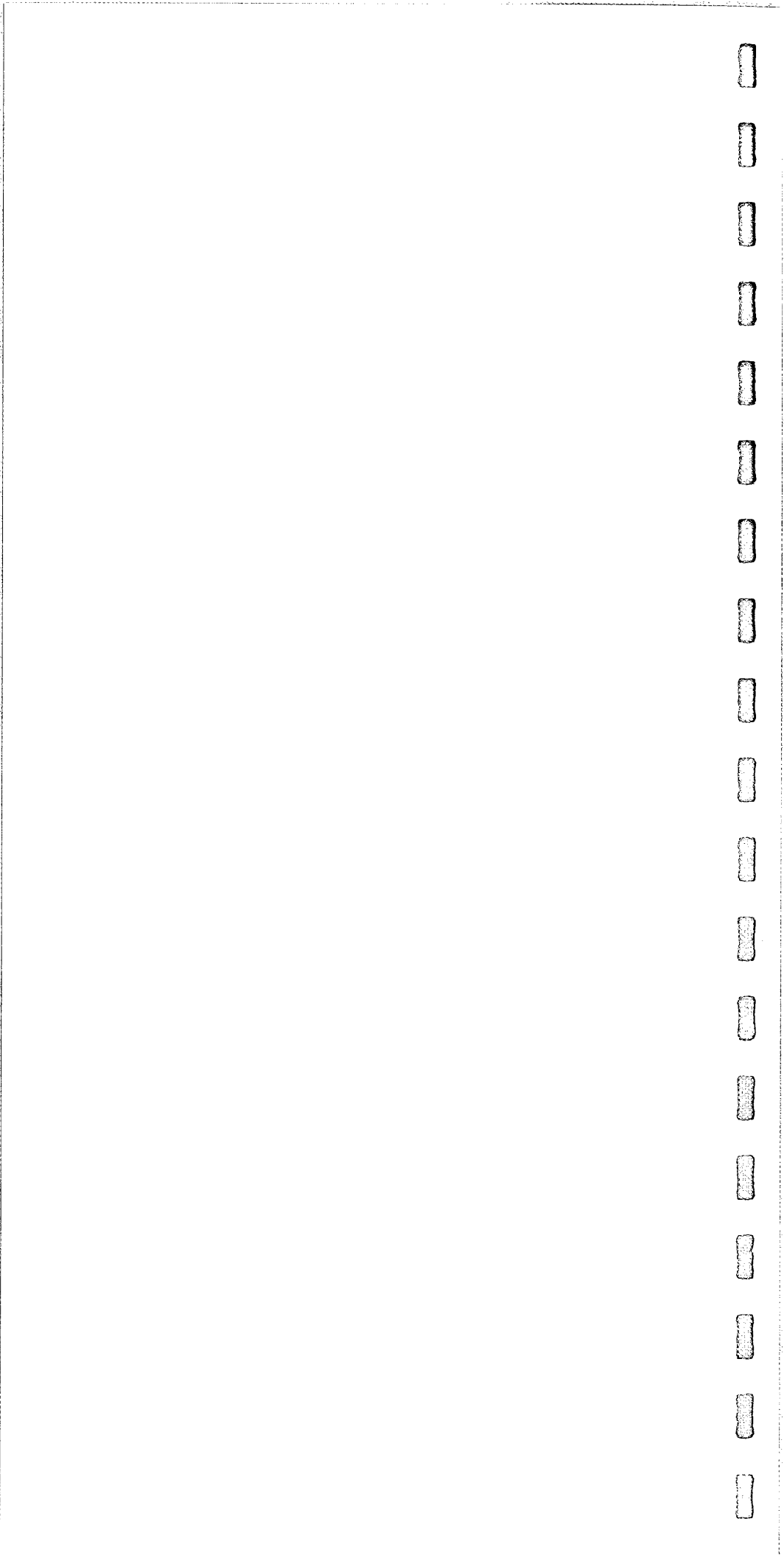
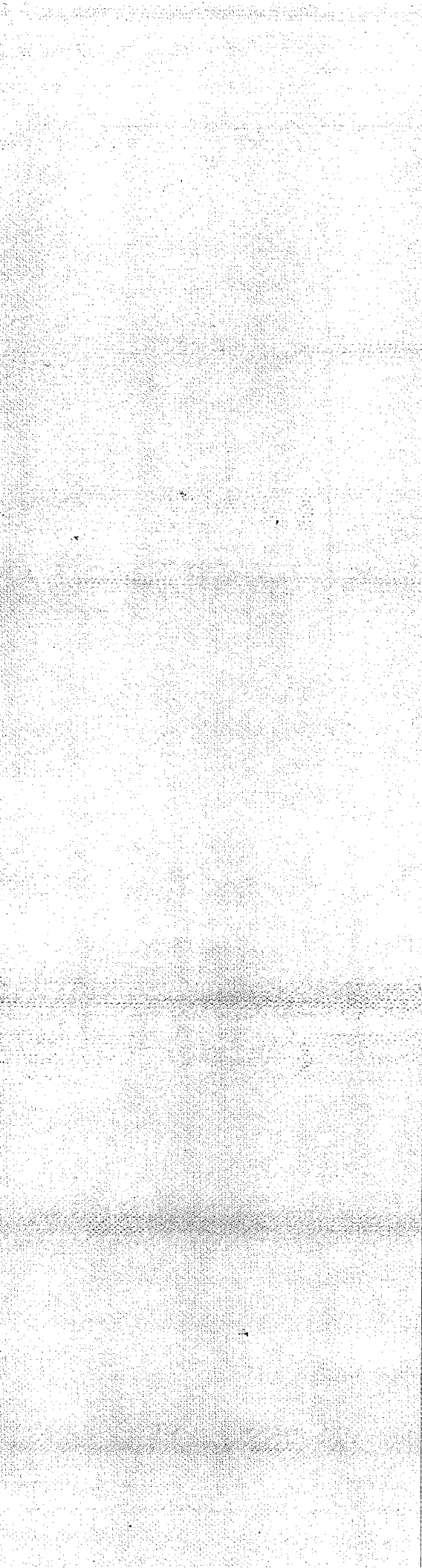
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Oregon Department of Transportation Transportation Development Branch Transportation Planning Analysis Unit					
Preliminary Traffic Signal Warrant Analysis ¹					
Major Street: N. ADAIR ST			Minor Street: N. YEW ST		
Project: Cornelius Wal-Mart			City/County: Cornelius, OR		
Year: 2006 Background			Alternative: Weekday PM Peak Hour		
Preliminary Signal Warrant Volumes					
Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100 70		percent of standard warrants 100 70	
Case A: Minimum Vehicular Traffic					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
Case B: Interruption of Continuous Traffic					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250
5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)					
		100 percent of standard warrants			
		70 percent of standard warrants ²			
Preliminary Signal Warrant Calculation					
	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	10,600	17,860	NO
	Minor	1	2,650	1,150	
Case B	Major	2	15,900	17,860	NO
	Minor	1	1,350	1,150	
Analyst and Date: CBT 8.30.05		Reviewer and Date:			

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.





Appendix H

Year 2006 Total Traffic
Level-of-Service
Worksheets



Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Scenario: wsam Scenario Report

Command: wsam
 Volume: wsam
 Geometry: with site AM
 Impact Fee: Default Impact Fee
 Trip Generation: Weekday AM
 Trip Distribution: with site
 Paths: Default Paths
 Routes: Default Routes
 Configuration: wsam

Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base Del/ LOS	V/ Veh C	Future Del/ V/ C	Change in
# 1 Pacific Ave/Mountain View Ln	B	14.3 0.690	B 14.5 0.716	+ 0.201 D/V
# 2 W Baseline St/4th Ave	B	10.1 0.605	B 11.7 0.633	+ 1.605 D/V
# 3 W Baseline St/10th Ave	B	13.0 0.657	B 13.4 0.673	+ 0.386 D/V
# 4 N Adair St/4th Ave	A	7.0 0.414	A 9.5 0.446	+ 2.545 D/V
# 5 N Adair St/10th Ave	B	11.1 0.428	B 11.3 0.461	+ 0.164 D/V
# 6 N Holladay St/10th Ave	B	10.6 0.000	B 10.9 0.000	+ 0.289 D/V
# 8 N Adair Street/RIRO Driveway	A	0.0 0.000	B 11.6 0.000	+11.635 D/V
# 9 S Driveway/4th Ave/Barlow St	A	8.7 0.000	A 9.6 0.000	+ 0.957 D/V
# 10 N Driveway/4th Ave	A	0.0 0.000	A 9.1 0.000	+ 9.109 D/V
# 11 Pacific Ave/Quince St	C	33.1 0.681	C 33.7 0.701	+ 0.613 D/V
# 15 W Baseline St/N Yew St	C	22.6 0.000	C 24.2 0.000	+ 1.516 D/V
# 24 N Adair St/N Yew St	C	24.0 0.000	D 26.5 0.000	+ 2.470 D/V
# 52 S 4th Ave/S Heather St	A	7.3 0.047	A 7.3 0.053	+ 0.006 V/C
# 53 S 10th Ave/Dogwood St	B	11.2 0.000	B 11.3 0.000	+ 0.098 D/V

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Tue Aug 23, 2005 14:22:35															Page 3-1														
Kittelson & Associates, Inc. -- Project # 7059																													
Cornelius Wal-Mart -- Cornelius, Oregon																													
2006 Total Traffic Conditions -- Weekday AM Peak Hour																													

Level of Service Computation Report																													
2000 HCM Operations Method (Future Volume Alternative)																													

Intersection #1 Pacific Ave/Mountain View Ln																													

Cycle (sec): 100										Critical Vol./Cap. (X): 0.716																			
Loss Time (sec): 12 (Y+R = 4 sec)										Average Delay (sec./veh): 14.5																			
Optimal Cycle: 62										Level of Service: B																			

Approach: North Bound South Bound East Bound West Bound																													
Movement: L - T - R L - T - R L - T - R L - T - R																													
Control: Split Phase Split Phase Protected Protected																													
Rights: Include Include Include Include																													
Min. Green: 0																													
Lanes: 1 0 0 0 1 0																													

Volume Module:																													
Base Vol: 114 0 118 0 0 0 0 0 1135 141 79 786 0																													
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01																													
Initial Bse: 115 0 119 0 0 0 0 0 1146 142 80 794 0																													
Added Vol: 0 0 2 0 0 0 0 0 36 0 1 17 0																													
In-Process: 0 0 0 0 0 0 0 0 22 0 0 34 0																													
Initial Fut: 115 0 121 0 0 0 0 0 1204 142 81 845 0																													
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00																													
PHF Adj: 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84																													
PHF Volume: 137 0 144 0 0 0 0 0 1434 170 96 1006 0																													
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0																													
Reduced Vol: 137 0 144 0 0 0 0 0 1434 170 96 1006 0																													
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00																													
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00																													
Final Vol: 137 0 144 0 0 0 0 0 1434 170 96 1006 0																													

Saturation Flow Module:																													
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900																													
Adj/Justment: 0.90 1.00 0.81 1.00 1.00 1.00 1.00 0.88 0.88 0.88 0.88 1.00																													
Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 1.79 0.21 1.00 2.00 0.00																													
Final Sat: 1718 0 1537 0 0 0 0 0 2996 354 1671 3343 0																													

Capacity Analysis Module:																													
Vol/Sat: 0.08 0.00 0.09 0.00 0.00 0.00 0.00 0.48 0.48 0.06 0.30 0.00																													
Crit Moves: ****																													
Green/Cycle: 0.13 0.00 0.13 0.00 0.00 0.00 0.00 0.67 0.67 0.08 0.75 0.00																													
Volume/Cap: 0.61 0.00 0.72 0.00 0.00 0.00 0.00 0.72 0.72 0.72 0.40 0.00																													
Delay/Veh: 45.8 0.0 53.3 0.0 0.0 0.0 0.0 11.7 11.7 61.6 4.6 0.0																													
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00																													
AdjDel/Veh: 45.8 0.0 53.3 0.0 0.0 0.0 0.0 11.7 11.7 61.6 4.6 0.0																													
HCM2Kavg: 5 0 6 0 0 0 0 17 17 5 6 0																													

Kittelson & Associates, Inc.		Project # 7059		Page 4-1	
Cornelius Wal-Mart		Cornelius, Oregon			
2006 Total Traffic Conditions		Weekday AM Peak Hour			
Level of Service Computation Report					
2000 HCM Operations Method (Future Volume Alternative)					
Intersection #2 W Baseline St/4th Ave					
Cycle (sec):	70	Critical Vol./Cap. (X):	0.633		
Loss Time (sec):	8 (Y+R = 4 sec)	Average Delay (sec/veh):	11.7		
Optimal Cycle:	39	Level of Service:	B		
Approach: North Bound South Bound East Bound West Bound					
Movement:	L - T - R	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Permitted	Permitted	Permitted	Permitted	Permitted
Include	Include	Include	Include	Include	Include
Right:					
Min. Green:	0 0 1 0 1	0 0 1 0 0	0 1 0 1 0	0 0 0 0 0	0 0 0 0 0
Lanes:					
Volume Module:					
Base Vol:	0 73 103 38 43	0 13 1156 79	0 0	0 0	0 0
Growth Adj:	1.01 1.01 1.01 1.01 1.01	1.01 1.01 1.01 1.01 1.01	1.01 1.01 1.01	1.01 1.01	1.01
Initial Bse:	0 74 104 38 43	0 13 1168 80	0 0	0 0	0 0
Added Vol:	0 5 0 42 2	0 65 25	0 0	0 0	0 0
In-Process:	0 0 0 0 0	0 0 22	0 0	0 0	0 0
Initial Fut:	0 79 104 80 45	0 78 1165 80	0 0	0 0	0 0
User Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00
PHF Adj:	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88 0.88 0.88	0.88 0.88 0.88	0.88 0.88	0.88
PHF Volume:	0 65 118 91 52	0 89 1323 91	0 0	0 0	0 0
Reduced Vol:	0 0 0 0 0	0 0 0	0 0	0 0	0 0
Reduced Vol:	0 89 118 91 52	0 89 1323 91	0 0	0 0	0 0
PCE Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00
WLF Adj:	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00	1.00
WLF Volume:	0 89 118 91 52	0 89 1323 91	0 0	0 0	0 0
Saturation Flow Module:					
Sat/Lane:	1900 1900	1900 1900	1900 1900	1900 1900	1900
Adj Adj:	1.00 0.96	0.63 0.90	0.77 0.77	0.81 1.00	1.00 1.00
Adj Adj:	1.00 1.00	1.00 1.00	0.73 1.87	1.00 0.00	1.00 0.00
Lanes:	0 000	0 000	0 184 2738	1535	0 0
Final Sat:	0 1828 1543 1188 1712	0 184 2738 1535	0 0	0 0	0 0
Capacity Analysis Module:					
Vol/Sat:	0.00 0.05	0.08 0.08 0.03	0.00 0.48 0.48	0.06 0.00 0.00	0.00 0.00
Crit Moves:		****	****		
Green/Cycle:	0.00 0.12	0.12 0.12	0.00 0.76 0.76	0.76 0.00 0.00	0.00 0.00
Volume/Cap:	0.00 0.40	0.63 0.25	0.00 0.63 0.63	0.08 0.00 0.00	0.00 0.00
Delay/Veh:	0.0 33.8	44.2 30.7	0.0 5.1 5.1	2.2 0.0 0.0	0.0 0.0
User Del/Veh:	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00	1.00 1.00
Adj Del/Veh:	0.0 33.8	44.2 30.7	0.0 5.1 5.1	2.2 0.0 0.0	0.0 0.0
ICM2K Avg:	0 2 4 1 0 9 9 1 0 0 0				

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #3 W Baseline St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.673
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 13.4
Optimal Cycle: 43 Level of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0
Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 1 0 0 0 0
Volume Module:
Base Vol.: 0 100 128 64 94 0 72 1174 42 0 0 0
Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 0 101 129 65 95 0 73 1186 42 0 0 0
Added Vol.: 0 7 0 0 0 0 0 14 3 0 0 0
In-Process: 0 0 0 0 0 0 0 22 0 0 0 0
Initial Fut.: 0 108 129 70 95 0 73 1222 45 0 0 0
User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj.: 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume: 0 121 145 78 107 0 82 1373 51 0 0 0
Reduced Vol.: 0 0 0 0 0 0 0 0 0 0 0 0
Reduced Vol.: 0 121 145 78 107 0 82 1373 51 0 0 0
PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 0 121 145 78 107 0 82 1373 51 0 0 0
Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 1.00 0.92 0.78 0.62 0.94 1.00 0.77 0.77 0.80 1.00 1.00 1.00
Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.11 1.89 1.00 0.00 0.00 0.00
Final Sat.: 0 1742 1478 1172 1792 0 164 2757 1528 0 0 0
Capacity Analysis Module:
Vol/Sat: 0.00 0.07 0.10 0.07 0.06 0.00 0.50 0.50 0.03 0.00 0.00 0.00
Crit Moves: 0.00 0.15 0.15 0.15 0.15 0.00 0.74 0.74 0.74 0.00 0.00 0.00
Green/Cycle: 0.00 0.15 0.15 0.15 0.15 0.00 0.74 0.74 0.74 0.00 0.00 0.00
Volume/Cap: 0.00 0.48 0.67 0.46 0.41 0.00 0.67 0.67 0.05 0.00 0.00 0.00
Delay/Veh: 0.0 33.7 43.8 35.9 31.8 0.0 6.4 6.4 2.5 0.0 0.0 0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 0.0 33.7 43.8 35.9 31.8 0.0 6.4 6.4 2.5 0.0 0.0 0.0
HCM2kAvg: 0 3 4 3 3 0 11 11 0 0 0 0

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 N Adair St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.446
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 9.5
Optimal Cycle: 28 Level of Service: A

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Lanes: 1 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0
Volume Module:
Base Vol.: 67 26 0 0 14 15 0 0 14 15 0 0 15 0 0 0 0
Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 68 26 0 0 14 15 0 0 14 15 0 0 15 0 0 0 0
Added Vol.: 0 70 0 0 0 44 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut.: 68 96 0 0 58 15 0 0 58 15 0 0 70 904 17 0
User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj.: 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume: 76 108 0 0 65 17 0 0 65 17 0 0 78 1016 19 0
Reduced Vol.: 76 108 0 0 65 17 0 0 65 17 0 0 78 1016 19 0
Reduced Vol.: 76 108 0 0 65 17 0 0 65 17 0 0 78 1016 19 0
PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 76 108 0 0 65 17 0 0 65 17 0 0 78 1016 19 0
Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.67 0.95 1.00 1.00 0.89 0.75 1.00 1.00 1.00 1.00 1.00 1.00 0.87 0.87 0.87 0.87
Lanes: 1.00 1.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.14 1.83 0.03 0.03
Final Sat.: 1277 1809 0 0 1697 1420 0 0 0 0 0 0 234 3032 57 57
Capacity Analysis Module:
Vol/Sat: 0.06 0.06 0.00 0.00 0.04 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.34 0.34 0.34 0.34
Crit Moves: 0.13 0.13 0.00 0.00 0.13 0.13 0.00 0.00 0.00 0.00 0.00 0.00 0.75 0.75 0.75 0.75
Green/Cycle: 0.13 0.13 0.00 0.00 0.13 0.13 0.00 0.00 0.00 0.00 0.00 0.00 0.45 0.45 0.45 0.45
Volume/Cap: 0.44 0.45 0.00 0.00 0.29 0.09 0.00 0.00 0.00 0.00 0.00 0.00 0.45 0.45 0.45 0.45
Delay/Veh: 36.0 33.7 0.0 0.0 30.4 27.5 0.0 0.0 0.0 0.0 0.0 0.0 3.8 3.8 3.8 3.8
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 36.0 33.7 0.0 0.0 30.4 27.5 0.0 0.0 0.0 0.0 0.0 0.0 3.8 3.8 3.8 3.8
HCM2kAvg: 3 3 0 0 2 0 0 0 0 0 0 0 5 5 5 5

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Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.461
Loss time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 11.3
Optimal Cycle: 29 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 1 0

Volume Module:
Base Vol: 79 89 0 0 93 58 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 80 90 0 0 94 59 0 0 0 0 0 0 0 0 0 0 0 0

Added Vol: 7 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 87 90 0 0 99 62 0 0 0 0 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91

PHF Volume: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.60 0.89 1.00 1.00 0.90 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Final Sat.: 1134 1682 0 0 1712 1434 0 0 0 0 0 0 0 0 0 0 0 0

Capacity Analysis Module:
Vol/Sat: 0.08 0.06 0.00 0.00 0.06 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: ****
Green/Cycle: 0.18 0.18 0.00 0.00 0.18 0.18 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.46 0.32 0.00 0.00 0.35 0.26 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Delay/Veh: 32.8 27.6 0.0 0.0 28.0 27.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #6 N Holladay St/10th Ave

Average Delay (sec/veh): 3.0 Worst Case Level Of Service: Bf 10.91
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0

Volume Module:
Base Vol: 34 84 0 0 84 32 40 0 16 0 0 0 0 0 0 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 34 85 0 0 85 32 40 0 16 0 0 0 0 0 0 0 0 0

Added Vol: 0 0 0 0 3 11 7 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 34 90 0 0 93 43 47 0 16 0 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 37 97 0 0 100 47 51 0 17 0 0 0 0 0 0 0 0 0

Reduced Vol: 37 97 0 0 100 47 51 0 17 0 0 0 0 0 0 0 0 0

Final Vol.: 37 97 0 0 100 47 51 0 17 0 0 0 0 0 0 0 0 0

Critical Gap Module:
Critical Gap: 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2

FollowUpTime: 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3

Capacity Module:
Conflict Vol: 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150

Potent Cap.: 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407 1407

Move Cap.: 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402 1402

Volume/Cap: 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03

Level Of Service Module:
Queue: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Stopped Del: 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6 7.6

LOS by Move: A A A A A A A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap.: 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.461
Loss time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 11.3
Optimal Cycle: 29 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 1 0

Volume Module:
Base Vol: 79 89 0 0 93 58 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 80 90 0 0 94 59 0 0 0 0 0 0 0 0 0 0 0 0

Added Vol: 7 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 87 90 0 0 99 62 0 0 0 0 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91

PHF Volume: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 95 99 0 0 109 68 0 0 0 0 0 0 0 0 0 0 0 0

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.60 0.89 1.00 1.00 0.90 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Final Sat.: 1134 1682 0 0 1712 1434 0 0 0 0 0 0 0 0 0 0 0 0

Capacity Analysis Module:
Vol/Sat: 0.08 0.06 0.00 0.00 0.06 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: ****
Green/Cycle: 0.18 0.18 0.00 0.00 0.18 0.18 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.46 0.32 0.00 0.00 0.35 0.26 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Delay/Veh: 32.8 27.6 0.0 0.0 28.0 27.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report

 2000 HCM Unsignalized Method (Future Volume Alternative)

 Intersection #9 S Driveway/4th Ave/Barlow St

[illegible][illegible]

Level Of Service Module:											
Queue:	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.1	xxxx	xxxx	xxxxx
Stopped Del:	7.3	xxxx	xxxxx	7.3	xxxx	xxxxx	xxxxx	8.6	xxxxx	xxxx	xxxxx
OS by Move:	A	*		A	*		*	A	*		
Movement:	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR	- RT	LT	- LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	718	xxxx	xxxxx	xxxxx	792
Shared Queue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	0.1
Shared StpDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	10.0	xxxx	xxxxx	xxxxx	9.6
Shared LOS:	*	*	*	*	*	*	8	*	*	*	A
ApproachDel:	xxxxxx	*		xxxxxx	*		8.6	*	*	*	9.6
ApproachLOS:							A				A

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Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report
 2000 HCM Unsignalized Method (Future Volume Alternative)

 Intersection #10 N Driveway/4th Ave

 Average Delay (sec/veh): 1.2 Worst Case Level of Service: AL 9.11

 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Uncontrolled Uncontrolled Stop Sign Stop Sign
 Rights: Include Include Include Include
 Lanes: 0 1 0 0 0 0 1 0 0 0 1 0 0 0 0
 Volume Module:
 Base Vol: 0 47 0 0 46 0 0 0 0 0 0 0 0 0 0
 Growth Adj: 1.00 1.01 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Initial Bse: 0 47 0 0 46 0 0 0 0 0 0 0 0 0 0
 Added Vol: 13 2 0 0 1 10 5 0 1 0 0 0 0 0 0
 In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 13 49 0 0 47 10 5 0 1 0 0 0 0 0 0
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
 PHF Volume: 14 52 0 0 50 11 5 0 1 0 0 0 0 0 0
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol.: 14 52 0 0 50 11 5 0 1 0 0 0 0 0 0
 Critical Gap Module:
 Critical Gap: 4.1 xxx xxxxxx xxxxxx 6.4 xxx 6.2 xxxxxx xxxxxx
 FollowUpTm: 2.2 xxx xxxxxx xxxxxx 3.5 xxx 3.3 xxxxxx xxxxxx
 Capacity Module:
 Cnflct Vol: 60 xxx xxxxxx xxxxxx 135 xxx 55 xxx xxxxxx xxxxxx
 Potent Cap.: 1556 xxx xxxxxx xxxxxx 864 xxx 1017 xxx xxxxxx xxxxxx
 Move Cap.: 1556 xxx xxxxxx xxxxxx 858 xxx 1017 xxx xxxxxx xxxxxx
 Volume/Cap: 0.01 xxx xxxxxx xxxxxx 0.01 xxx 0.00 xxx xxxxxx xxxxxx
 Level of Service Module:
 Queue: 0.0 xxx xxxxxx xxxxxx 0.0 xxx 0.0 xxxxxx xxxxxx
 Stopped Del: 7.3 xxx xxxxxx xxxxxx 9.2 xxx 8.5 xxxxxx xxxxxx
 LOS by Move: A * * * * A * A * * *
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap.: xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
 Shared Queue: 0.0 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
 Shrd StpDel: 7.3 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
 Shared LOS: A * * * * * * * * * *
 ApproachDel: xxxxxx 9.1 A xxxxxx
 ApproachLOS: xxxxxx * * * * * * * * * *

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Kittelston & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report
 2000 HCM Operations Method (Future Volume Alternative)

 Intersection #11 Pacific Ave/Quince St

 Cycle (sec): 100 Critical Vol./Cap. (X): 0.701
 Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 33.7
 Optimal Cycle: 69 Level Of Service: C

 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Protected Protected Protected Protected
 Rights: Include Include Include Include
 Lanes: 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Volume Module:
 Base Vol: 29 188 301 136 150 66 76 554 12 190 393 52
 Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
 Initial Bse: 29 190 304 137 152 67 77 560 12 192 397 53
 Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 29 190 314 147 152 67 77 574 12 197 404 58
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85
 PHF Volume: 34 223 369 173 178 78 90 675 14 232 475 68
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0
 Reduced Vol: 34 223 369 173 178 78 90 675 14 232 475 68
 PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Final Vol.: 34 223 369 173 178 78 90 675 14 232 475 68
 Saturation Flow Module:
 Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
 Adjustment: 0.84 0.89 0.75 0.80 0.81 0.81 0.90 0.90 0.90 0.86 0.77
 Lanes: 1.00 1.00 1.00 1.00 0.69 0.31 1.00 1.96 0.04 1.00 2.00 1.00
 Final Sat.: 1597 1682 1429 1329 1066 469 1718 3356 71 1641 3281 1468
 Capacity Analysis Module:
 Vol/Sat: 0.02 0.13 0.26 0.11 0.17 0.17 0.05 0.20 0.20 0.14 0.14 0.05
 Crit Moves: 0.04 0.19 0.39 0.16 0.31 0.31 0.13 0.29 0.00 0.20 0.36 0.36
 Green/Cycle: 0.54 0.70 0.66 0.70 0.54 0.54 0.40 0.70 xxx 0.70 0.40 0.13
 Volume/Cap: 55.8 44.7 27.9 48.3 29.7 29.7 41.1 34.1 0.0 43.7 24.3 21.7
 Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 User DelAdj: 55.8 44.7 27.9 48.3 29.7 29.7 41.1 34.1 0.0 43.7 24.3 21.7
 AdjDel/Veh: 2 8 10 7 7 7 3 11 54 8 6 1
 HCM2KAVG: *****

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Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Basline St/N Yew St

Average Delay (sec/veh): 1.2 Worst Case Level of Service: CF 24-21

Approach: North Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign

Rights: Include Include Include

Lanes: 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0

Volume Module:

Base Vol: 0 7 14 27 3 0 37 1204 12 0 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 7 14 27 3 0 37 1216 12 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 38 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 22 0 0 0 0 0

Initial Fut: 0 7 14 29 3 0 37 1276 12 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88

PHF Volume: 0 8 16 33 3 0 42 1450 14 0 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 0 8 16 33 3 0 42 1450 14 0 0 0 0

Critical Gap Module:

Critical Gap: 6.6 6.3 7.2 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6

FollowUpTime: 4.0 3.3 3.6 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1

Capacity Module:

Conflict Vol: 732 814 1549 732 814 1549 732 814 1549 732 814 1549

Potent Cap: 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542

Move Cap: 113 111 111 111 111 111 111 111 111 111 111 111

Volume/Cap: 0.07 0.04 0.13 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03

Level of Service Module:

Queue: 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542

Stopped Del: 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542 1542

LOS by Move: A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 213 224 224 224 224 224 224 224 224 224 224 224

Shared Queue: 0.4 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6

Shrd StpDel: 24.0 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2

Shared LOS: C C C C C C C C C C C C

ApproachDel: 24.0 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2 24.2

ApproachLOS: C C C C C C C C C C C C

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): 2.2 Worst Case Level of Service: D [26.5]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign

Rights: Include Include Include

Lanes: 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0

Volume Module:

Base Vol: 15 18 0 0 28 8 0 0 0 0 0 0 43 853 17

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 15 18 0 0 28 8 0 0 0 0 0 0 43 862 17

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 18 1

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 34 0

Initial Fut: 15 18 0 0 30 8 0 0 0 0 0 0 43 914 18

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86

PHF Volume: 18 21 0 0 35 9 0 0 0 0 0 0 51 1062 21

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 18 21 0 0 35 9 0 0 0 0 0 0 51 1062 21

Critical Gap Module:

Critical Gap: 7.2 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6

FollowUpTime: 3.5 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Capacity Module:

Conflict Vol: 650 1184 543 543 543 543 543 543 543 543 543 543 543 543 543

Potent Cap: 378 187 193 193 193 193 193 193 193 193 193 193 193 193 193

Move Cap: 303 176 182 182 182 182 182 182 182 182 182 182 182 182 182

Volume/Cap: 0.06 0.12 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02

Level of Service Module:

Queue: 650 1184 543 543 543 543 543 543 543 543 543 543 543 543 543

Stopped Del: 650 1184 543 543 543 543 543 543 543 543 543 543 543 543 543

LOS by Move: A A A A A A A A A A A A A A A

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 217 217 217 217 217 217 217 217 217 217 217 217 217 217 217

Shared Queue: 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6

Shrd StpDel: 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1

Shared LOS: D D D D D D D D D D D D D D D

ApproachDel: 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1

ApproachLOS: D D D D D D D D D D D D D D D

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
 2000 HCM 4-Way Stop Method (Future Volume Alternative)
 Intersection #52 S 4th Ave/S Heather St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.053
 Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): 7.3
 Optimal Cycle: 0 Level Of Service: A
 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Stop Sign Stop Sign Stop Sign Stop Sign
 Rights: Include Include Include Include
 Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0
 Volume Module:
 Base Vol.: 8 27 1 8 11 10 15 8 6 1 8 7
 Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
 Initial Bse.: 8 27 1 8 11 10 15 8 6 1 8 7
 Added Vol.: 0 0 0 0 0 0 0 0 0 0 0 0
 PasserByVol.: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut.: 8 32 1 8 13 10 15 8 6 1 8 7
 User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj.: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
 PHF Volume: 9 35 1 9 14 11 16 9 7 1 9 8
 Reduced Vol.: 0 0 0 0 0 0 0 0 0 0 0 0
 PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Final Vol.: 9 35 1 9 14 11 16 9 7 1 9 8
 Saturation Flow Module:
 Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Lanes: 0.20 0.78 0.02 0.26 0.42 0.32 0.52 0.27 0.21 0.06 0.50 0.44
 Final Sat.: 165 659 21 228 370 285 438 234 175 54 432 378
 Capacity Analysis Module:
 Vol/Sat: 0.05 0.05 0.05 0.04 0.04 0.04 0.04 0.04 0.04 0.02 0.02 0.02
 Crit Moves: ****
 Delay/Veh: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.2 7.2 7.2
 Delay Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 AdjDel/Veh: 7.4 7.4 7.4 7.2 7.2 7.2 7.3 7.3 7.3 7.2 7.2 7.2
 LOS by Move: A A A A A A A A A A A A
 ApproachDel: 7.4 7.4 7.2 7.3 7.3 7.2 7.2 7.2 7.2 7.2 7.2 7.2
 Delay Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 ApprAdjDel: 7.4 7.4 7.2 7.3 7.3 7.2 7.2 7.2 7.2 7.2 7.2 7.2
 LOS by Appr: A A A A A A A A A A A A

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday AM Peak Hour

Level Of Service Computation Report
 2000 HCM Unsimplified Method (Future Volume Alternative)
 Intersection #53 S 10th Ave/Dogwood St

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: B [11.3]
 Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled
 Rights: Include Include Include Include
 Lanes: 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0
 Volume Module:
 Base Vol.: 2 147 11 3 104 4 15 9 4 15 14 2
 Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
 Initial Bse.: 2 148 11 3 105 4 15 9 4 15 14 2
 Added Vol.: 0 0 0 0 0 0 0 0 0 0 0 0
 PasserByVol.: 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut.: 2 155 11 3 108 4 15 9 4 15 14 2
 User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj.: 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87
 PHF Volume: 2 179 13 3 124 5 17 10 5 17 16 2
 Reduced Vol.: 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol.: 2 179 13 3 124 5 17 10 5 17 16 2
 Critical Gap Module:
 Critical Gap: 4.2 xxx xxxxx 4.3 xxx xxxxx 7.1 6.5 6.2 7.1 6.5 6.2
 FollowUpTim: 2.3 xxx xxxxx 2.4 xxx xxxxx 3.5 4.0 3.3 3.5 4.0 3.3
 Capacity Module:
 Conflict Vol.: 140 xxx xxxxx 197 xxx xxxxx 350 347 139 338 343 198
 Potent Cap.: 1379 xxx xxxxx 1285 xxx xxxxx 608 580 915 620 583 848
 Move Cap.: 1366 xxx xxxxx 1279 xxx xxxxx 582 569 906 602 572 839
 Volume/Cap: 0.00 xxx xxxxx 0.00 xxx xxxxx 0.03 0.02 0.01 0.01 0.03 0.00
 Level Of Service Module:
 Queue: 0.0 xxx xxxxx 0.0 xxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Stopped Del: 7.6 xxx xxxxx 7.8 xxx xxxxx xxxxx xxxxx xxxxx xxxxx
 LOS by Move: A * A * A * A * A * A * A * A *
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap.: xxx xxx xxxxx xxx xxx xxxxx xxx 609 xxxxx xxx 597 xxxxx
 SharedQueue: xxx xxx xxxxx xxx xxx xxxxx xxx 0.2 xxxxx xxxxx 0.1 xxxxx
 Shrd StpDel: xxx xxx xxxxx xxx xxx xxxxx xxx 11.2 xxxxx xxxxx 11.3 xxxxx
 Shared LOS: * * * * * B *
 ApproachDel: xxxxx 11.2 B
 LOS by Appr: A B

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday PM Peak Hour

Scenario Report

Scenario: wspm

Command: wspm
 Volume: wspm
 Geometry: with site PM
 Impact Fee: Default Impact Fee
 Trip Generation: Weekday PM
 Trip Distribution: with site
 Paths: Default Paths
 Routes: Default Routes
 Configuration: wspm

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday PM Peak Hour

Impact Analysis Report
Level Of Service

Intersection	Base Del/ LOS Veh C	V/ C	Future Del/ LOS Veh C	Change in
# 1 Pacific Ave/Mountain View Ln	B 12.2	0.649	B 12.8	0.718 + 0.611 D/V
# 2 W Baseline St/4th Ave	B 10.9	0.653	B 19.9	0.870 + 8.952 D/V
# 3 W Baseline St/10th Ave	B 14.0	0.686	B 15.4	0.756 + 1.396 D/V
# 4 N Adair St/4th Ave	A 7.8	0.675	B 18.2	0.817 +10.426 D/V
# 5 N Adair St/10th Ave	B 13.6	0.721	B 14.7	0.785 + 1.075 D/V
# 6 N Holladay St/10th Ave	B 10.8	0.000	B 12.8	0.000 + 2.026 D/V
# 8 N Adair Street/RIRO Driveway	A 0.0	0.000	E 35.6	0.000 +35.605 D/V
# 9 S Driveway/4th Ave/Barlow St	A 8.9	0.000	C 15.2	0.000 + 6.266 D/V
# 10 N Driveway/4th Ave	A 0.0	0.000	A 9.8	0.000 + 9.811 D/V
# 11 Pacific Ave/Quince St	D 36.4	0.854	D 38.7	0.891 + 2.260 D/V
# 15 W Baseline St/N Yew St	F 54.9	0.000	F 107.6	0.000 +52.729 D/V
# 24 N Adair St/N Yew St	F OVRFL	0.000	F OVRFL	0.000 + 0.000 D/V
# 52 S 4th Ave/S Heather St	A 7.4	0.107	A 7.5	0.129 + 0.022 V/C
# 53 S 10th Ave/Dogwood St	B 12.5	0.000	B 13.0	0.000 + 0.542 D/V

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Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #1 Pacific Ave/Mountain View Ln

Cycle (sec): 100 Critical Vol./Cap. (X): 0.718
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 12.8
Optimal Cycle: 62 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0

Volume Module: 126 0 82 0 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 127 0 83 0 0 0 0 0 0 0 0 0 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 127 0 89 0 0 0 0 0 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Volume: 134 0 93 0 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 134 0 93 0 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 134 0 93 0 0 0 0 0 0 0 0 0 0 0 0 0

Saturation Flow Module: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Vol/Sat: 0.07 0.00 0.06 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: 0.10 0.00 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Green/Cycle: 0.72 0.00 0.56 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.10 0.00 0.10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Delay/Veh: 55.9 0.0 46.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 55.9 0.0 46.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #2 W Baseline St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.870
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 19.9
Optimal Cycle: 75 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 0 0 1 0 1 1 0 1 0 0 0 0 0 1 0 0

Volume Module: 0 73 75 44 126 0 21 1368 93 0 0 0 0 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 74 76 44 127 0 21 1382 94 0 0 0 0 0 0 0 0

Added Vol: 0 14 0 0 0 0 0 188 -70 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 85 0 0 0 0 0 0 0 0

Initial Fut: 0 88 76 232 143 0 209 1397 94 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 0 94 81 250 154 0 225 1502 101 0 0 0 0 0 0 0 0

Reduced Vol: 0 94 81 250 154 0 225 1502 101 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 0 94 81 250 154 0 225 1502 101 0 0 0 0 0 0 0 0

Saturation Flow Module: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Vol/Sat: 0.00 0.05 0.05 0.19 0.08 0.00 0.58 0.58 0.06 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: 0.00 0.22 0.22 0.22 0.22 0.00 0.67 0.67 0.67 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Green/Cycle: 0.00 0.23 0.23 0.23 0.23 0.00 0.87 0.87 0.87 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.00 0.23 0.23 0.23 0.23 0.00 0.87 0.87 0.87 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Delay/Veh: 0.0 23.7 24.0 54.6 25.7 0.0 14.8 14.8 4.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 0.0 23.7 24.0 54.6 25.7 0.0 14.8 14.8 4.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

***** Intersection #3 W Baseline St/10th Ave *****

***** Critical Vol./Cap. (X): 0.756 *****

***** Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 15.4 *****

***** Optimal Cycle: 52 Level Of Service: B *****

***** Approach: North Bound East Bound West Bound *****

***** Movement: L - T - R L - T - R L - T - R L - T - R *****

***** Control: Permitted Permitted Permitted Permitted *****

***** Rights: Include Include Include Include *****

***** Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 *****

***** Lanes: 0 0 1 0 1 1 0 1 0 0 0 1 0 0 0 0 *****

***** Volume Module: *****

Base Vol: 0 125 91 93 201 0 94 1337 77 0 0 0

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 126 92 94 203 0 95 1350 78 0 0 0

Added Vol: 0 20 0 0 0 0 0 96 22 0 0 0

In-Process: 0 0 0 0 0 0 0 85 0 0 0 0

Initial Fut: 0 146 92 94 203 0 95 1531 100 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97

PHF Volume: 0 151 95 97 209 0 98 1579 103 0 0 0

Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 0 151 95 97 209 0 98 1579 103 0 0 0

***** Saturation Flow Module: *****

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 0.99 0.84 0.55 0.98 1.00 0.79 0.79 0.83 1.00 1.00

Lanes: 0.00 1.00 1.00 1.00 1.00 0.00 0.12 1.88 1.00 0.00 0.00

Final Sat.: 0 1881 1592 1045 1862 0 176 2832 1575 0 0 0

***** Capacity Analysis Module: *****

Vol/Sat: 0.00 0.08 0.06 0.09 0.11 0.00 0.56 0.56 0.07 0.00 0.00

Crit Moves: *****

Green/Cycle: 0.00 0.15 0.15 0.15 0.15 0.00 0.74 0.74 0.74 0.00 0.00

Volume/Cap: 0.00 0.54 0.40 0.62 0.76 0.00 0.76 0.76 0.09 0.00 0.00

Delay/Veh: 0.0 34.9 32.0 45.4 46.0 0.0 7.9 7.9 2.7 0.0 0.0

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 0.0 34.9 32.0 45.4 46.0 0.0 7.9 7.9 2.7 0.0 0.0

HCM2Kavg: 0 4 2 5 6 0 14 14 1 0 0 0

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Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

***** Intersection #4 N Adair St/4th Ave *****

***** Critical Vol./Cap. (X): 0.817 *****

***** Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 18.2 *****

***** Optimal Cycle: 62 Level Of Service: B *****

***** Approach: North Bound South Bound East Bound West Bound *****

***** Movement: L - T - R L - T - R L - T - R L - T - R *****

***** Control: Permitted Permitted Permitted Permitted *****

***** Rights: Include Include Include Include *****

***** Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 *****

***** Lanes: 1 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 *****

***** Volume Module: *****

Base Vol: 72 20 0 0 30 43 0 0 0 0 144 1607 24

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 73 20 0 0 30 43 0 0 0 0 145 1623 24

Added Vol: 0 202 0 0 204 0 0 0 0 0 0 47 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 73 222 0 0 234 43 0 0 0 0 145 1762 44

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 78 239 0 0 252 47 0 0 0 0 156 1895 48

Reduced Vol: 0 0 0 0 252 47 0 0 0 0 156 1895 48

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 78 239 0 0 252 47 0 0 0 0 156 1895 48

***** Saturation Flow Module: *****

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.35 1.00 1.00 1.00 1.00 0.84 1.00 1.00 1.00 0.93 0.93 0.93

Lanes: 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.15 1.81 0.04

Final Sat.: 663 1900 0 0 1900 1588 0 0 0 265 3207 81

***** Capacity Analysis Module: *****

Vol/Sat: 0.12 0.13 0.00 0.00 0.13 0.03 0.00 0.00 0.00 0.59 0.59 0.59

Crit Moves: *****

Green/Cycle: 0.16 0.16 0.00 0.00 0.16 0.16 0.00 0.00 0.00 0.72 0.72 0.72

Volume/Cap: 0.73 0.77 0.00 0.00 0.82 0.18 0.00 0.00 0.00 0.82 0.82 0.82

Delay/Veh: 62.5 45.2 0.0 0.0 49.1 26.8 0.0 0.0 0.0 9.6 9.6 9.6

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 62.5 45.2 0.0 0.0 49.1 26.8 0.0 0.0 0.0 9.6 9.6 9.6

HCM2Kavg: 6 7 0 0 8 1 0 0 0 18 18 18

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Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.785
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 14.7
Optimal Cycle: 56 Level Of Service: B
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Permitted Permitted Permitted Permitted
Rights: Include Include Include Include
Lanes: 1 0 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0
Volume Module:
Base Vol: 85 129 0 0 147 93 0 0 0 144 1628 66
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 86 130 0 0 148 94 0 0 0 145 1644 67
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 106 130 0 0 148 102 0 0 0 145 1775 67
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96
PHF Volume: 110 136 0 0 155 106 0 0 0 152 1849 69
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol.: 110 136 0 0 155 106 0 0 0 152 1849 69
Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.53 0.99 1.00 1.00 0.97 0.80 1.00 1.00 1.00 0.93 0.93 0.93
Lanes: 1.00 1.00 0.00 0.00 1.00 1.00 0.00 0.00 0.00 0.14 1.79 0.07
Final Sat.: 1000 1881 0 0 1845 1528 0 0 0 259 3161 119
Capacity Analysis Module:
Vol/Sat: 0.11 0.07 0.00 0.00 0.08 0.07 0.00 0.00 0.00 0.59 0.59 0.59
Crit Moves: ****
Green/Cycle: 0.14 0.14 0.00 0.00 0.14 0.00 0.00 0.00 0.00 0.75 0.75 0.75
Volume/Cap: 0.79 0.51 0.00 0.00 0.60 0.49 0.00 0.00 0.00 0.79 0.79 0.79
Delay/Veh: 63.6 34.9 0.0 0.0 38.0 35.7 0.0 0.0 0.0 7.9 7.9 7.9
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 63.6 34.9 0.0 0.0 38.0 35.7 0.0 0.0 0.0 7.9 7.9 7.9
HCM2KAVG: 6 3 0 0 4 3 0 0 0 16 16 16

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #6 N Holladay St/10th Ave

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: B [12.8]
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0
Volume Module:
Base Vol: 18 95 0 0 124 35 22 0 33 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 18 96 0 0 125 35 22 0 33 0 0 0
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 18 96 0 0 133 69 70 0 33 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69 0.69
PHF Volume: 26 139 0 0 193 101 102 0 48 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol.: 26 139 0 0 193 101 102 0 48 0 0 0
Critical Gap Module:
Critical Gap: 4.1 xxx xxx xxx xxx xxx 6.5 xxx 6.3 xxx xxx xxx
FollowUpTm: 2.2 xxx xxx xxx xxx xxx 3.6 xxx 3.4 xxx xxx xxx
Capacity Module:
Conflict Vol: 298 xxx xxx xxx xxx xxx 439 xxx 247 xxx xxx xxx
Potential Cap: 1252 xxx xxx xxx xxx xxx 564 xxx 777 xxx xxx xxx
Move Cap: 1248 xxx xxx xxx xxx xxx 553 xxx 774 xxx xxx xxx
Volume/Cap: 0.02 xxx xxx xxx xxx xxx 0.18 xxx 0.06 xxx xxx xxx
Level Of Service Module:
Queue: 0.1 xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx
Stopped Del: 7.9 xxx xxx xxx xxx xxx xxx xxx xxx xxx
LOS by Move: A *
Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap: xxx xxx xxx xxx xxx xxx xxx 609 xxx xxx xxx
Shared Queue: 0.1 xxx xxx xxx xxx xxx xxx 1.0 xxx xxx xxx
Shrd StpDel: 7.9 xxx xxx xxx xxx xxx 12.8 xxx xxx xxx
Shared LOS: A *
ApproachDel: xxxxxx xxxxxx 12.8 B
ApproachLOS: B

wsbm Tue Aug 23, 2005 14:22:42 Page 11-1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #10 N Driveway/4th Ave
Average Delay (sec/veh): 2.9 Worst Case Level Of Service: A- 9.81
Cycle Time (sec): 100 Critical Vol./Cap. (X): 0.891
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 35.7
Optimal Cycle: 113 Level Of Service: D

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Uncontrolled Uncontrolled Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 1 0 0 0 1 0 0 0 0

Volume Module:
Base Vol: 0 38 0 0 77 0 0 0 0 0 0 0 0 0 0 0
Growth Adj: 1.00 1.01 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Initial Bse: 0 38 0 0 78 0 0 0 0 0 0 0 0 0 0 0
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 38 52 0 82 29 34 0 10 0 0 0 0 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume: 40 55 0 86 31 36 0 11 0 0 0 0 0 0 0
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol: 40 55 0 86 31 36 0 11 0 0 0 0 0 0 0

Critical Gap Module:
Critical Gap: 4.1 xxx xxxxxx xxxxxx xxxxxx 6.4 xxx 6.2 xxxxxx xxxxxx xxxxxx
FollowUpTm: 2.2 xxx xxxxxx xxxxxx xxxxxx 3.5 xxx 3.3 xxxxxx xxxxxx xxxxxx

Capacity Module:
Conflict Vol: 117 xxx xxxxxx xxxxxx xxxxxx 236 xxx 101 xxx xxxxxx xxxxxx
Potential Cap: 1485 xxx xxxxxx xxxxxx xxxxxx 756 xxx 959 xxx xxxxxx xxxxxx
Move Cap: 1485 xxx xxxxxx xxxxxx xxxxxx 740 xxx 959 xxx xxxxxx xxxxxx
Volume/Cap: 0.03 xxx xxxxxx xxxxxx xxxxxx 0.05 xxx 0.01 xxx xxxxxx xxxxxx

Level Of Service Module:
Queue: 0.1 xxx xxxxxx xxxxxx xxxxxx 0.2 xxx 0.0 xxxxxx xxxxxx xxxxxx
Stopped Del: 7.5 xxx xxxxxx xxxxxx xxxxxx 10.1 xxx 8.8 xxxxxx xxxxxx xxxxxx
LOS by Move: A * * * * * B * * * * * A * * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT
Shared Cap: xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
Shared Queue: 0.1 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
Shrd Stpel: 7.5 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
Shared LOS: A * * * * * * * * * *
ApproachDel: xxxxxx * * * * * 9.8 * * * * *
ApproachLOS: * * * * * A

wsbm Tue Aug 23, 2005 14:22:42 Page 12-1

Kittelton & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)
Intersection #11 Pacific Ave/Quince St
Cycle Time (sec): 100 Critical Vol./Cap. (X): 0.891
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 35.7
Optimal Cycle: 113 Level Of Service: D

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Protected Protected Protected Protected
Rights: Include Include Include Include
Lanes: 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0

Volume Module:
Base Vol: 64 166 317 127 224 115 120 825 52 362 958 136
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 65 168 320 128 226 116 121 833 53 366 968 137
Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0
Initial Fut: 65 168 348 156 226 116 121 875 53 398 1016 169
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99
PHF Volume: 65 169 352 158 229 117 122 884 53 402 1026 171
Reduced Vol: 0 0 0 0 0 0 0 0 0 0 0 0
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Vol: 65 169 352 158 229 117 122 884 53 402 1026 171

Saturation Flow Module:
Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment: 0.86 0.91 0.77 0.87 0.87 0.87 0.91 0.91 0.91 0.93 0.93 0.83
Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Final Sat: 1641 1727 1468 1655 1093 561 1736 3247 195 1769 5538 1585

Capacity Analysis Module:
Vol/Sat: 0.04 0.10 0.24 0.10 0.21 0.21 0.07 0.27 0.27 0.23 0.29 0.11
Crit Moves: **** * * * * * * * * * * * * * * *
Green/Cycle: 0.04 0.14 0.40 0.14 0.23 0.23 0.11 0.31 0.00 0.25 0.45 0.45
Volume/Cap: 0.89 0.69 0.60 0.69 0.89 0.89 0.64 0.89 xxxxxx 0.89 0.64 0.24
Delay/Veh: 116.4 49.1 25.7 49.9 58.7 58.7 50.0 42.8 0.0 55.2 22.1 17.1
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh: 116.4 49.1 25.7 49.9 58.7 58.7 50.0 42.8 0.0 55.2 22.1 17.1
HCM2kAvg: 4 6 9 6 14 14 5 17 73 16 13 3

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Baseline St/N Yew St

Average Delay (sec/veh): 8.1 Worst Case Level Of Service: F[107.6]

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0

Volume Module:
Base Vol: 0 17 17 88 19 0 28 1331 27 0 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 0 17 17 89 19 0 28 1344 27 0 0 0 0
Added Vol: 0 0 0 0 0 0 0 112 0 0 0 0
In-Process: 0 0 0 0 0 0 0 85 0 0 0 0
Initial Fut: 0 17 17 95 19 0 28 1541 27 0 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90
PHF Volume: 0 19 19 105 21 0 31 1713 30 0 0 0 0
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0
Final Vol: 0 19 19 105 21 0 31 1713 30 0 0 0 0
Critical Gap Module:
Critical Gap: 6.5 6.2 7.1 6.5 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1
Followupprim: 4.0 3.3 3.5 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Capacity Module:
Conflict Vol: 879 1818 879 950 1833 879 20 444 1590 1563 1563 1563 1563
Potent Cap: 79 349 79 349 77 73 77 73 73 73 73 73 73
Move Cap: 75 347 75 347 77 73 77 73 73 73 73 73 73
Volume/Cap: 0.25 0.05 0.05 0.29 0.05 0.05 0.02 0.02 0.02 0.02 0.02 0.02 0.02

Level Of Service Module:
Queue: 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5
Stopped Del: 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5
LOS by Move: E F E F E F E F E F E F E F
Movement: L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R
Shared Cap: 124 143 124 143 124 143 124 143 124 143 124 143 124
Shared Queue: 1.2 5.9 1.2 5.9 1.2 5.9 1.2 5.9 1.2 5.9 1.2 5.9 1.2
Shrd StpDel: 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5
Shared LOS: E F E F E F E F E F E F E F
ApproachDel: 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5 107.6 46.5
ApproachLOS: E F E F E F E F E F E F E F

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Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): OVERFLOW Worst Case Level Of Service: F[xxxxx]

Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R
Control: Stop Sign Stop Sign Stop Sign Stop Sign
Rights: Include Include Include Include
Lanes: 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Volume Module:
Base Vol: 22 11 0 0 87 27 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01
Initial Bse: 22 11 0 0 88 27 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Added Vol: 0 0 0 0 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
In-Process: 0
Initial Fut: 22 11 0 0 94 27 0 0 0 0 0 0 0 0 0 0 0 0 0 0
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
PHF Adj: 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92
PHF Volume: 24 12 0 0 102 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduct Vol: 0
Final Vol: 24 12 0 0 102 30 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Critical Gap Module:
Critical Gap: 7.1 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5
Followupprim: 3.5 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0

Capacity Module:
Conflict Vol: 1093 2123 1093 2076 1034 1034 1034 1034 1034 1034 1034 1034 1034
Potent Cap: 193 51 193 51 281 281 281 281 281 281 281 281 281
Move Cap: 0 50 0 50 52 52 52 52 52 52 52 52 52
Volume/Cap: 0.24 0.24 0.24 0.24 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11 0.11

Level Of Service Module:
Queue: 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7
Stopped Del: 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7
LOS by Move: F F F F F F F F F F F F F F
Movement: L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R L - T - R
Shared Cap: 0 0 0 0 64 64 64 64 64 64 64 64 64
Shared Queue: 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5
Shrd StpDel: 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7
Shared LOS: F F F F F F F F F F F F F F
ApproachDel: 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7 634.7
ApproachLOS: F F F F F F F F F F F F F F

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Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Scenario Report

Scenario: wssa

Command:

Volume: wssa

Geometry: with site SAT

Impact Fee: Default Impact Fee

Trip Generation: Saturday

Trip Distribution: with site

Paths: Default Paths

Routes: Default Routes

Configuration: wssa

Kittelson & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Impact Analysis Report

Level Of Service

Intersection

	LOS	Base Del/ Veh C	V/ C	Future Del/ Veh C	Change in
# 1 Pacific Ave/Mountain View Ln	B	10.4	0.619	B 11.6	0.724 + 1.154 D/V
# 2 W Baseline St/4th Ave	A	9.9	0.594	C 26.1	0.932 +16.227 D/V
# 3 W Baseline St/10th Ave	B	13.1	0.619	B 15.2	0.701 + 2.077 D/V
# 4 N Adair St/4th Ave	A	7.3	0.512	B 18.4	0.755 +11.105 D/V
# 5 N Adair St/10th Ave	B	11.1	0.550	B 12.2	0.649 + 1.112 D/V
# 6 N Holladay St/10th Ave	A	9.6	0.000	B 10.9	0.000 + 1.345 D/V
# 8 N Adair Street/RIRO Driveway	A	0.0	0.000	C 23.1	0.000 +23.116 D/V
# 9 S Driveway/4th Ave/Barlow St	A	8.8	0.000	C 21.6	0.000 +12.787 D/V
# 10 N Driveway/4th Ave	A	0.0	0.000	B 10.3	0.000 +10.347 D/V
# 11 Pacific Ave/Quince St	C	28.3	0.677	C 30.1	0.732 + 1.814 D/V
# 15 W Baseline St/N Yew St	D	34.1	0.000	F 59.6	0.000 +25.492 D/V
# 24 N Adair St/N Yew St	E	40.2	0.000	F 86.2	0.000 +45.995 D/V

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Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #1 Pacific Ave/Mountain View Ln

Cycle (sec): 100 Critical Vol./Cap. (X): 0.724
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 11.6
Optimal Cycle: 63 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Split Phase Split Phase Protected Protected

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0

Volume Module:

Base Vol.: 64 0 104 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 65 0 105 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Added Vol.: 0 0 10 0 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut.: 65 0 115 0 0 0 0 0 0 0 0 0 0 0 0 0

User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj.: 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91

PHF Volume: 71 0 126 0 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol.: 71 0 126 0 0 0 0 0 0 0 0 0 0 0 0 0

PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 71 0 126 0 0 0 0 0 0 0 0 0 0 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 0.85 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Final Sat.: 1805 0 1615 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.04 0.00 0.08 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: 0.11 0.00 0.11 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Green/Cycle: 0.36 0.00 0.72 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 42.6 0.0 57.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Delay/Veh: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User DelAdj: 42.6 0.0 57.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

AdjDel/Veh: 2 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0

HCN2kAvg: 2 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0

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Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #2 W Baseline St/4th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.932
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 26.1
Optimal Cycle: 99 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 0 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0

Volume Module:

Base Vol.: 0 71 61 36 70 0 40 1319 75 0 0 0 0 0 0 0

Growth Adj.: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 72 62 36 71 0 40 1332 76 0 0 0 0 0 0 0 0

Added Vol.: 0 25 0 255 22 0 298 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 67 0 0 0 0 0 0 0 0

Initial Fut.: 0 97 62 291 93 0 338 1309 76 0 0 0 0 0 0 0 0

User Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj.: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Volume: 0 102 65 307 98 0 356 1378 80 0 0 0 0 0 0 0 0

Reduced Vol.: 0 102 65 307 98 0 356 1378 80 0 0 0 0 0 0 0 0

PCE Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj.: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol.: 0 102 65 307 98 0 356 1378 80 0 0 0 0 0 0 0 0

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 0.97 0.82 0.66 0.97 1.00 0.78 0.78 0.82 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 0.00 1.00 1.00 1.00 1.00 1.00 0.41 1.59 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Final Sat.: 0 1845 1554 1259 1845 0 612 2368 1567 0 0 0 0 0 0 0 0

Capacity Analysis Module:

Vol/Sat: 0.00 0.06 0.04 0.24 0.05 0.00 0.58 0.58 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Crit Moves: 0.00 0.26 0.26 0.26 0.26 0.00 0.62 0.62 0.62 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Green/Cycle: 0.00 0.21 0.16 0.93 0.20 0.00 0.93 0.93 0.08 0.00 0.00 0.00 0.00 0.00 0.00 0.00

Volume/Cap: 0.00 0.21 20.8 60.3 21.1 0.00 21.8 21.8 5.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Delay/Veh: 0.0 21.2 20.8 60.3 21.1 0.0 21.8 21.8 5.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0

User DelAdj: 0.0 21.2 20.8 60.3 21.1 0.0 21.8 21.8 5.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0

AdjDel/Veh: 0 2 1 14 2 0 25 25 1 0 0 0 0 0 0 0

HCN2kAvg: 0 2 1 14 2 0 25 25 1 0 0 0 0 0 0 0

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Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.649
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/Veh): 12.2
Optimal Cycle: 40 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 1 0 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0

Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 0

Volume Module: 85 109 0 0 106 60 0 0 0 95 1171 57

Base Vol: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 86 110 0 0 107 61 0 0 0 96 1183 58

Initial Bse: 35 0 0 0 0 0 0 0 0 0 149 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 37 0

In-Process: 121 110 0 0 107 76 0 0 0 96 1369 58

Initial Fut: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 129 117 0 0 114 80 0 0 0 102 1456 61

Reduced Vol: 129 117 0 0 114 80 0 0 0 102 1456 61

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 129 117 0 0 114 80 0 0 0 102 1456 61

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)
Intersection #6 N Holladay St/10th Ave

Average Delay (sec/Veh): 3.3 Worst Case Level Of Service: B[10.9]

Approach: North Bound South Bound East Bound West Bound

Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled

Rights: Include Include Include Include

Lanes: 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Volume Module: 19 88 0 0 76 17 16 0 16 0 0 0

Base Vol: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 19 89 0 0 77 17 16 0 16 0 0 0

Initial Bse: 0 0 0 0 15 59 67 0 0 0 0 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 19 89 0 0 92 76 83 0 16 0 0 0

Initial Fut: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 20 94 0 0 97 80 88 0 17 0 0 0

Reduced Vol: 20 94 0 0 97 80 88 0 17 0 0 0

Final Vol: 20 94 0 0 97 80 88 0 17 0 0 0

Critical Gap Module:

Critical Gap: 4.1 xxx xxxxxx xxxxxx xxxxxx xxxxxx 6.5 xxx 6.3 xxxxxx xxxxxx xxxxxx

FollowUp: 2.2 xxx xxxxxx xxxxxx xxxxxx xxxxxx 3.6 xxx 3.4 xxxxxx xxxxxx xxxxxx

Capacity Module:

Conflict Vol: 181 xxx xxxxxx xxxxxx xxxxxx xxxxxx 275 xxx 141 xxx xxxxxx xxxxxx

Potential Cap: 1377 xxx xxxxxx xxxxxx xxxxxx xxxxxx 698 xxx 886 xxx xxxxxx xxxxxx

Move Cap: 1372 xxx xxxxxx xxxxxx xxxxxx xxxxxx 688 xxx 883 xxx xxxxxx xxxxxx

Kittelston & Associates, Inc. -- Project # 7059
Cornelius Wal-Mart -- Cornelius, Oregon
2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)
Intersection #5 N Adair St/10th Ave

Cycle (sec): 70 Critical Vol./Cap. (X): 0.649
Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/Veh): 12.2
Optimal Cycle: 40 Level Of Service: B

Approach: North Bound South Bound East Bound West Bound

Control: Permitted Permitted Permitted Permitted

Rights: Include Include Include Include

Min. Green: 1 0 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0

Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 0 0 1 0 0

Volume Module: 85 109 0 0 106 60 0 0 0 95 1171 57

Base Vol: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Growth Adj: 86 110 0 0 107 61 0 0 0 96 1183 58

Initial Bse: 35 0 0 0 0 0 0 0 0 0 149 0

Added Vol: 0 0 0 0 0 0 0 0 0 0 37 0

In-Process: 121 110 0 0 107 76 0 0 0 96 1369 58

Initial Fut: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

User Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Volume: 129 117 0 0 114 80 0 0 0 102 1456 61

Reduced Vol: 129 117 0 0 114 80 0 0 0 102 1456 61

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 129 117 0 0 114 80 0 0 0 102 1456 61

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report
 2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #8 N Adair Street/RIRO Driveway
 Average Delay (sec/veh): 3.5 Worst Case Level Of Service: Cf 23.11

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Stop Sign Stop Sign Stop Sign Uncontrolled
 Rights: Include Include Include Include
 Lanes: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 1

Volume Module:
 Base Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1274 0
 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Initial Bse: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1287 0
 Added Vol: 0 0 0 0 0 262 0 0 0 0 0 0 0 0 75 238
 In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 37 0
 Initial Fut: 0 0 0 0 0 262 0 0 0 0 0 0 0 0 1249 238
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
 PHF Volume: 0 0 0 0 0 276 0 0 0 0 0 0 0 0 1314 251
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol: 0 0 0 0 0 276 0 0 0 0 0 0 0 0 1314 251

Critical Gap Module:
 Critical Gap: 4.1 xxxxx xxxxx 6.2 xxxxx xxxxx xxxxx xxxxx xxxxx
 FollowUp: 2.2 xxxxx xxxxx 3.3 xxxxx xxxxx xxxxx xxxxx xxxxx

Capacity Module:
 Conflict Vol: 657 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Potent Cap: 468 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Move Cap: 468 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Volume/Cap: 0.59 xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx

Level Of Service Module:
 Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Stopped Del: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 LOS by Move: * * * * * C
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Shared Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Shrd StpDel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx
 Shared LOS: * * * * *
 ApproachDel: xxxxx *
 ApproachLOS: 23.1 C

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 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report
 2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #9 S Driveway/4th Ave/Barlow St
 Average Delay (sec/veh): 7.6 Worst Case Level Of Service: Cf 21.61

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R
 Control: Uncontrolled Uncontrolled Uncontrolled Stop Sign
 Rights: Include Include Include Include
 Lanes: 0 0 1 0 0 0 0 1 0 0 0 1 0 0 1 0 0

Volume Module:
 Base Vol: 0 40 8 7 39 0 0 0 0 0 0 0 0 8 0 7
 Growth Adj: 1.00 1.01 1.01 1.01 1.01 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 Initial Bse: 0 40 8 7 39 0 0 0 0 0 0 0 0 8 0 7
 Added Vol: 290 67 0 0 0 13 7 20 4 264 0 0 0 0 0 0
 In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Initial Fut: 290 107 8 7 52 7 20 4 264 0 0 0 0 8 0 7
 User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
 PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
 PHF Volume: 305 113 9 7 55 7 21 4 278 9 5 7 9 5 7
 Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 Final Vol: 305 113 9 7 55 7 21 4 278 9 5 7 9 5 7

Critical Gap Module:
 Critical Gap: 4.1 xxxxx xxxxx 7.1 6.5 6.2 7.1 6.5 6.2
 FollowUp: 2.2 xxxxx xxxxx 3.5 4.0 3.3 3.5 4.0 3.3

Capacity Module:
 Conflict Vol: 63 xxxxx xxxxx 808 806 59 943 805 117
 Potent Cap: 1553 xxxxx xxxxx 302 318 1013 245 318 940
 Move Cap: 1553 xxxxx xxxxx 240 241 1013 163 242 940
 Volume/Cap: 0.20 xxxxx xxxxx 0.01 xxxxx xxxxx 0.09 0.02 0.27 0.06 0.02 0.01

Level Of Service Module:
 Queue: 0.7 xxxxx xxxxx 0.0 xxxxx xxxxx xxxxx 1.1 xxxxx xxxxx xxxxx
 Stopped Del: 7.9 xxxxx xxxxx 7.4 xxxxx xxxxx xxxxx 9.9 xxxxx xxxxx xxxxx
 LOS by Move: A * * * * * A
 Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT
 Shared Cap: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 240 xxxxx xxxxx xxxxx
 Shared Queue: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 0.3 xxxxx xxxxx xxxxx
 Shrd StpDel: xxxxx xxxxx xxxxx xxxxx xxxxx xxxxx 21.7 xxxxx xxxxx xxxxx
 Shared LOS: * * * * * C
 ApproachDel: xxxxx *
 ApproachLOS: 10.9 B

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Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #10 N Driveway/4th Ave

Average Delay (sec/veh): 3.7 Worst Case Level Of Service: B [10.3]

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Uncontrolled Uncontrolled Stop Sign Stop Sign

Rights: Include Include Include Include

Lanes: 0 1 0 0 0 0 1 0 1 0 0 0 0 0 0 0

Volume Module:

Base Vol: 0 47 0 0 46 0 0 0 0 0 0 0 0 0 0 0

Growth Adj: 1.03 1.04 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03

Initial Bse: 0 49 0 0 48 0 0 0 0 0 0 0 0 0 0 0

Added Vol: 0 0 0 0 7 52 47 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 67 69 0 0 55 52 47 0 0 0 0 0 0 0 0 0

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95

PHF Volume: 71 73 0 0 58 55 49 0 0 0 0 0 0 0 0 0

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 71 73 0 0 58 55 49 0 0 0 0 0 0 0 0 0

Critical Gap: 4.1 xxx xxxxxx xxxxxx xxxxxx 6.4 xxx 6.2 xxxxxx xxxxxx xxxxxx

Followup Tim: 2.2 xxx xxxxxx xxxxxx xxxxxx 3.5 xxx 3.3 xxxxxx xxxxxx xxxxxx

Capacity Module:

Conflict Vol: 112 xxx xxxxxx xxxxxx xxxxxx 299 xxx 85 xxx xxxxxx xxxxxx

Potent Cap: 1490 xxx xxxxxx xxxxxx xxxxxx 697 xxx 979 xxx xxxxxx xxxxxx

Move Cap: 1490 xxx xxxxxx xxxxxx xxxxxx 671 xxx 979 xxx xxxxxx xxxxxx

Volume/Cap: 0.05 xxx xxxxxx xxxxxx xxxxxx 0.07 xxx 0.01 xxx xxxxxx xxxxxx

Level Of Service Module:

Queue: 0.1 xxx xxxxxx xxxxxx xxxxxx 0.2 xxx 0.0 xxxxxx xxxxxx xxxxxx

Stopped Del: 7.5 xxx xxxxxx xxxxxx xxxxxx 10.8 xxx 8.7 xxxxxx xxxxxx xxxxxx

LOS by Move: A * * * * * B * * * * * A * * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Shared Queue: 0.1 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Shrd StDel: 7.5 xxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx

Shared LOS: A * * * * * * * * * * * * * * *

ApproachDel: xxxxxx 10.3 B xxxxxx

ApproachLOS: xxxxxx

Kittelton & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Pacific Ave/Quince St

Cycle (sec): 100 Critical Vol./Cap. (X): 0.732

Loss time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 30.1

Optimal Cycle: 74 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound

Movement: L - T - R L - T - R L - T - R L - T - R

Control: Protected Protected Protected Protected

Rights: Ovl Include Include Widebypass

Min. Green: 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Lanes: 1 0 1 0 1 1 0 0 1 0 1 0 1 0 1 0

Volume Module:

Base Vol: 64 77 222 125 113 74 105 733 69 269 860 135

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 65 78 224 126 114 75 106 740 70 272 869 136

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

PasserBVol: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 65 78 274 176 114 75 106 814 70 317 936 181

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93

PHF Volume: 70 84 295 190 123 80 114 876 75 341 1006 195

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Reduced Vol: 70 84 295 190 123 80 114 876 75 341 1006 195

PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Final Vol: 70 84 295 190 123 80 114 876 75 341 1006 195

Saturation Flow Module:

Sat/Lane: 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900

Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Lanes: 1736 1828 1554 1736 1039 681 1787 3253 278 1787 3574 1599

Final Sat: 1736 1828 1554 1736 1039 681 1787 3253 278 1787 3574 1599

Capacity Analysis Module:

Vol/Sat: 0.04 0.05 0.19 0.11 0.12 0.12 0.06 0.27 0.27 0.19 0.28 0.12

Crit Moves: 0.05 0.06 0.32 0.15 0.16 0.16 0.12 0.37 0.00 0.26 0.51 0.51

Green/Cycle: 0.75 0.73 0.59 0.73 0.75 0.75 0.55 0.73 xxxxx 0.73 0.55 0.24

Volume/Cap: 0.75 0.73 0.59 0.73 0.75 0.75 0.44 0.73 0.00 0.39 0.55 0.24

Delay/Veh: 74.4 67.4 30.1 50.8 51.0 51.0 44.8 29.5 0.0 39.7 16.9 13.7

User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

AdjDel/Veh: 74.4 67.4 30.1 50.8 51.0 51.0 44.8 29.5 0.0 39.7 16.9 13.7

Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #15 W Basline St/N Yew St

Average Delay (sec/veh): 3.5 Worst Case Level Of Service: F [59.6]

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
 Rights: Include Include Include Include
 Lanes: 0 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0

Volume Module: 0 17 14 48 15 0 32 1359 19 0 0 0 1.01 1.01 1.01 1.01

Base Vol: 0 17 14 48 15 0 32 1359 19 0 0 0 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 0 17 14 48 15 0 32 1373 19 0 0 0 1.01 1.01 1.01 1.01

Added Vol: 0 0 0 0 0 0 0 198 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 67 0 0 0 0 0 0 0 0

Initial Fut: 0 17 14 58 15 0 32 1638 19 0 0 0 1.00 1.00 1.00 1.00

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94

PHF Volume: 0 18 15 62 16 0 34 1742 20 0 0 0 0.94 0.94 0.94 0.94

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 0 18 15 62 16 0 34 1742 20 0 0 0 0.94 0.94 0.94 0.94

Critical Gap Module: 6.5 6.2 7.1 6.5 xxxxx 4.1 xxx xxxxx xxxxx xxxxx xxxxx

Critical Gp: xxxxx 4.0 3.3 3.5 4.0 xxxxx 2.2 xxx xxxxx xxxxx xxxxx xxxxx

FollowUp: 4.0 3.3 3.5 4.0 xxxxx 2.2 xxx xxxxx xxxxx xxxxx xxxxx

Capacity Module: 881 1821 881 949 1831 xxxxx 0 xxx xxxxx xxxxx xxxxx xxxxx

Conflict Vol: xxx 77 344 241 77 xxxxx 900 xxx xxxxx xxxxx xxxxx xxxxx

Potent Cap: xxx 74 344 181 74 xxxxx 900 xxx xxxxx xxxxx xxxxx xxxxx

Move Cap: xxx 0.25 0.04 0.34 0.22 xxxxx 0.04 xxx xxxxx xxxxx xxxxx xxxxx

Volume/Cap: xxx 0.25 0.04 0.34 0.22 xxxxx 0.04 xxx xxxxx xxxxx xxxxx xxxxx

Level Of Service Module: 881 1821 881 949 1831 xxxxx 0 xxx xxxxx xxxxx xxxxx xxxxx

Queue: xxx xxx xxx xxx xxx 0.1 xxx xxxxx xxxxx xxxxx xxxxx

Stopped Del: xxx xxx xxx xxx 9.2 xxx xxxxx xxxxx xxxxx xxxxx

LOS by Move: A * * * * * A * * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: xxx xxx 115 140 xxx xxx 140 xxx xxx 140 xxx xxx 140 xxx xxx

Shared Queue: xxx xxx 1.1 2.8 xxx xxx 1.1 2.8 xxx xxx 1.1 2.8 xxx xxx

Shrd Stpel: xxx xxx 48.8 59.6 xxx xxx 48.8 59.6 xxx xxx 48.8 59.6 xxx xxx

Shared LOS: E * * * * * A * * * * *

ApproachDel: 48.8 59.6 F * * * * *

ApproachLOS: E * * * * *

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 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Saturday Midday Peak Hour

Level Of Service Computation Report

2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #24 N Adair St/N Yew St

Average Delay (sec/veh): 6.0 Worst Case Level Of Service: F [86.2]

Approach: North Bound South Bound East Bound West Bound
 Movement: L - T - R L - T - R L - T - R L - T - R

Control: Stop Sign Stop Sign Stop Sign Stop Sign
 Rights: Include Include Include Include
 Lanes: 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0

Volume Module: 27 19 0 0 41 23 0 0 1.01 1.01 1.01 1.01

Base Vol: 27 19 0 0 41 23 0 0 1.01 1.01 1.01 1.01

Growth Adj: 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01

Initial Bse: 27 19 0 0 41 23 0 0 1.01 1.01 1.01 1.01

Added Vol: 0 0 0 0 0 0 0 0 0 0 0 0

In-Process: 0 0 0 0 0 0 0 0 0 0 0 0

Initial Fut: 27 19 0 0 51 23 0 0 1.00 1.00 1.00 1.00

User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

PHF Adj: 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90

PHF Volume: 30 21 0 0 57 26 0 0 0.90 0.90 0.90 0.90

Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0

Final Vol: 30 21 0 0 57 26 0 0 0.90 0.90 0.90 0.90

Critical Gap Module: 6.5 6.3 xxxxx xxxxx 4.1 xxx xxxxx

Critical Gp: 7.1 6.5 xxxxx xxxxx 4.1 3.4 xxxxx xxxxx

FollowUp: 3.5 4.0 xxxxx xxxxx 4.1 3.4 xxxxx xxxxx

Capacity Module: 881 1707 xxxxx xxxxx 829 829 xxxxx xxxxx

Conflict Vol: 881 1707 xxxxx xxxxx 829 829 xxxxx xxxxx

Potent Cap: 267 91 xxxxx xxxxx 93 364 xxxxx xxxxx

Move Cap: 122 89 xxxxx xxxxx 91 364 xxxxx xxxxx

Volume/Cap: 0.25 0.24 xxxxx xxxxx 0.07 0.07 xxxxx xxxxx

Level Of Service Module: 881 1707 xxxxx xxxxx 829 829 xxxxx xxxxx

Queue: xxxxx xxx xxx xxx xxx xxx xxx xxx xxx xxx xxx

Stopped Del: xxx xxx xxx xxx 7.3 xxx xxx xxx xxx

LOS by Move: A * * * * * A * * * * *

Movement: LT - LTR - RT LT - LTR - RT LT - LTR - RT LT - LTR - RT

Shared Cap: 106 xxx xxx xxx 119 xxx xxx xxx 119 xxx xxx xxx

Shared Queue: 2.2 xxx xxx xxx 3.8 xxx xxx xxx 3.8 xxx xxx xxx

Shrd Stpel: 67.8 xxx xxx xxx 86.2 xxx xxx xxx 86.2 xxx xxx xxx

Shared LOS: F * * * * * F * * * * *

ApproachDel: 67.8 86.2 F * * * * *

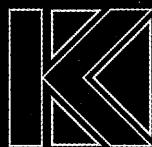
ApproachLOS: F * * * * *

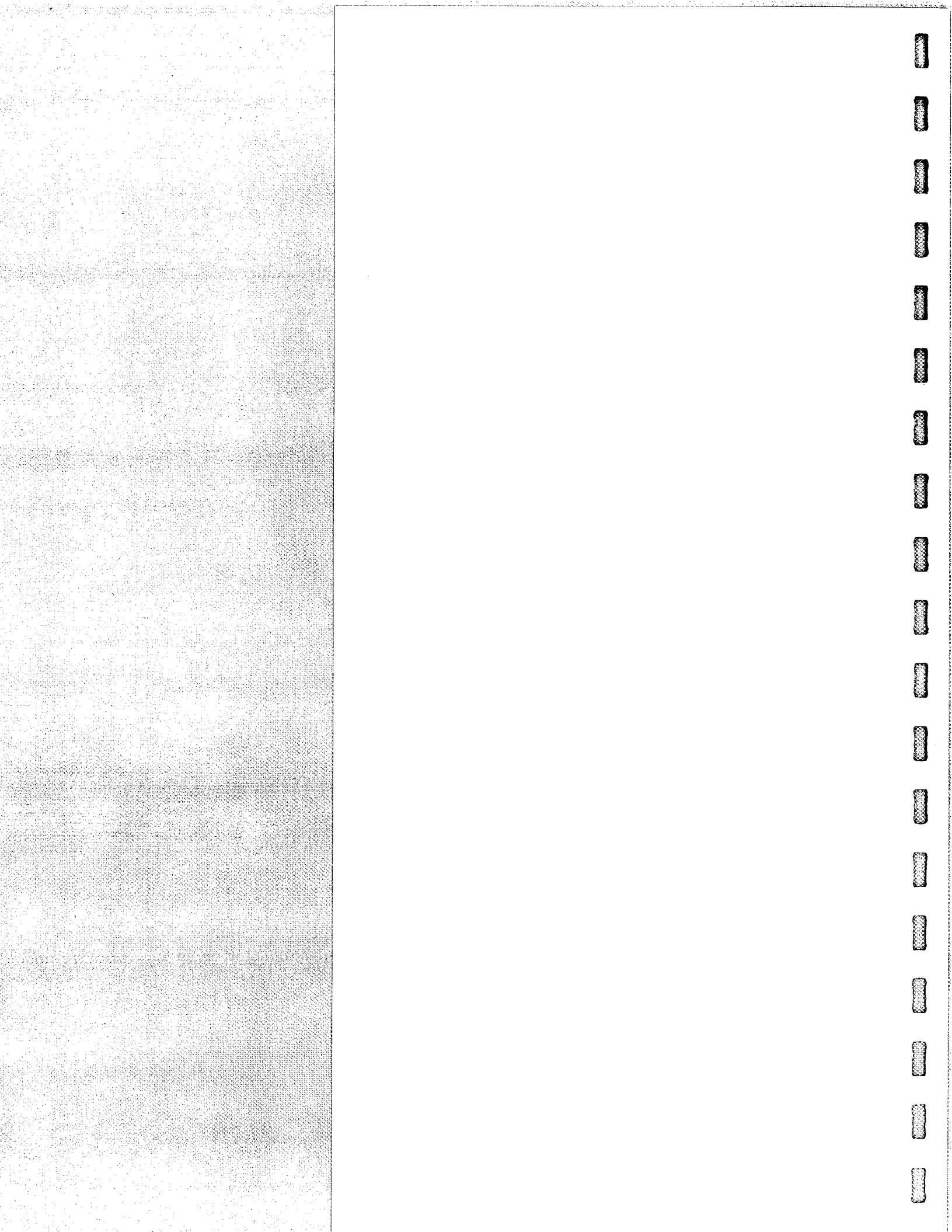
Traffix 7.7.1115 (c) 2004 Dowling Assoc. Licensed to KITTELSON, PORTLAND

Oregon Department of Transportation					
Transportation Development Branch					
Transportation Planning Analysis Unit					
Preliminary Traffic Signal Warrant Analysis¹					
Major Street: N. ADAIR ST			Minor Street: N. YEW ST		
Project: Cornelius Wal-Mart			City/County: Cornelius, OR		
Year: 2006 Total			Alternative: Weekday PM Peak Hour		
Preliminary Signal Warrant Volumes					
Number of Approach lanes		ADT on major street approaching from both directions		ADT on minor street, highest approaching volume	
Major Street	Minor Street	Percent of standard warrants 100 70		percent of standard warrants 100 70	
Case A: Minimum Vehicular Traffic					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
Case B: Interruption of Continuous Traffic					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250
5.65% of the above ADT volumes is equal to the MUTCD vehicles per hour (vph)					
		100 percent of standard warrants			
		70 percent of standard warrants ²			
Preliminary Signal Warrant Calculation					
	Street	Number of Lanes	Warrant Volumes	Approach Volumes	Warrant Met
Case A	Major	2	10,600	19,200	NO
	Minor	1	2,650	1,210	
Case B	Major	2	15,900	19,200	NO
	Minor	1	1,350	1,210	
Analyst and Date: CBT 8.30.05			Reviewer and Date:		

¹ Meeting preliminary signal warrants does **not** guarantee that a signal will be installed. Before a signal can be installed a traffic signal investigation must be conducted or reviewed by the Region Traffic Manager. Traffic signal warrants must be met and the State Traffic Engineer's approval obtained before a traffic signal can be installed on a state highway.

² Used due to 85th percentile speed in excess of 40 mph or isolated community with population of less than 10,000.



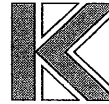


Appendix I

Queuing Analysis Worksheets

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7069
Analyst: CBT
Date: 8/29/2005
Filename: H:\projfile\7059\excel\Queuing\7059_Queue_Adair_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
 610 SW Alder, Suite 700
 Portland, Oregon 97205
 (503) 228-5230
 Fax: (503) 273-8169

Intersection: North Adair Street/North 4th Avenue
Conditions (yr, alt., etc.): 2006 Total Traffic - Weekday AM Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBLT	NBTH	SBTH	SBRT			WBLT/TH	WBTH/RT
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	68	96	58	15			522	489
G/C for movement:	0.13	0.13	0.13	0.13			0.75	0.75
Number of lanes:	1	1	1	1			1	1
CALCULATIONS:								
Length of red interval (sec):	60.9	60.9	60.9	60.9			17.5	17.5
Average total queue (veh):	1.2	1.6	1.0	0.3			2.5	2.3
Maximum total queue (veh):	3	4	3	1			5	5
Total queue length (feet):	75	100	75	25			125	125
Required storage/lane (feet):	75	100	75	25			125	125
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):	61							
Opposing sat. flow rate:	1697							
CALCULATIONS:								
Opposing flow ratio (Yo):	0.04							
Unblocked G/C:	0.10							
Effective red interval (sec):	63.2							
Average total queue (veh):	1.2							
Maximum total queue (veh):	3							
Total queue length (feet):	75							
Required storage/lane (feet):	75							

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) \cdot \text{Cycle length}$

Average queue/lane = $\text{Volume} \cdot \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N \cdot \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals $\geq N$) = $1 - \text{Sum of probabilities for vehicles } 0, 1, \dots, N-1$

Max N: Highest N such that the sum of probabilities $> (1 - \text{confidence level})$

Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = $(g/C - Yo) / (1 - Yo)$

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7059
Analyst: CBT
Date: 8/29/2005
Filename: H:\projfile\7059\excel\Queuing\7059_Queue_Adair_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
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 (503) 228-5230
 Fax: (503) 273-8169

Intersection: North Adair Street/North 4th Avenue
Conditions (yr, alt., etc.): 2006 Total Traffic - Weekday PM Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1 NBLT	#2 NBTH	#3 SBTH	#4 SBRT	#5	#6	#7 WBLT/TH	#8 WBTH/RT
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	73	222	234	43			1026	925
G/C for movement:	0.16	0.16	0.16	0.16			0.72	0.72
Number of lanes:	1	1	1	1			1	1
CALCULATIONS:								
Length of red interval (sec):	58.8	58.8	58.8	58.8			19.6	19.6
Average total queue (veh):	1.2	3.6	3.8	0.7			5.6	5.0
Maximum total queue (veh):	3	7	7	2			10	9
Total queue length (feet):	75	175	175	50			250	225
Required storage/lane (feet):	75	175	175	50			250	225
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):	234							
Opposing sat. flow rate:	1900							
CALCULATIONS:								
Opposing flow ratio (Yo):	0.12							
Unblocked G/C:	0.04							
Effective red interval (sec):	67.1							
Average total queue (veh):	1.4							
Maximum total queue (veh):	3							
Total queue length (feet):	75							
Required storage/lane (feet):	75							

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) \times \text{Cycle length}$

Average queue/lane = $\text{Volume} \times \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N \times \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals >= N) = $1 - \text{Sum of probabilities for vehicles } 0, 1, \dots, N-1$

Max N: Highest N such that the sum of probabilities > (1 - confidence level)

Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = $(g/C - Yo) / (1 - Yo)$

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7059
Analyst: CBT
Date: 8/29/2005
Filename: H:\projfile\7059\excel\Queuing\7059_Queue_Aldair_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
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 (503) 228-5230
 Fax: (503) 273-8169

Intersection: North Adair Street/North 4th Avenue
Conditions (yr, alt., etc.): 2006 Total Traffic - Saturday Mid-day Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBLT	NBTH	SBTH	SBLT			WBLT/TH	WBTH/RT
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	81	352	297	27			765	753
G/C for movement:	0.27	0.27	0.27	0.27			0.62	0.62
Number of lanes:	1	1	1	1			1	1
CALCULATIONS:								
Length of red interval (sec):	51.1	51.1	51.1	51.1			26.6	26.6
Average total queue (veh):	1.1	5.0	4.2	0.4			5.7	5.6
Maximum total queue (veh):	3	9	8	2			10	10
Total queue length (feet):	75	225	200	50			250	250
Required storage/lane (feet):	75	225	200	50			250	250
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):	297							
Opposing sat. flow rate:	1862							
CALCULATIONS:								
Opposing flow ratio (Yo):	0.16							
Unblocked G/C:	0.13							
Effective red interval (sec):	60.8							
Average total queue (veh):	1.4							
Maximum total queue (veh):	4							
Total queue length (feet):	100							
Required storage/lane (feet):	100							

METHODOLOGY AND FORMULAS USED:

Length of red interval = (1 - G/C) * Cycle length

Average queue/lane = Volume * Red Interval / 3600

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than

or equal to the maximum queue.

(Prob. of arrivals = N) = (Red Interval)^N * exp(-N) / N! (the Poisson distribution)

(Prob. of arrivals >= N) = 1 - Sum of probabilities for vehicles 0, 1, ..., N-1

Max N: Highest N such that the sum of probabilities > (1 - confidence level)

Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded
up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = (g/C - Yo)/(1-Yo)

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7059
Analyst: CBT
Date: 8/29/2005
Filename: H:\projfile\7059\excel\Queuing\7059_Queue_Baseline_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
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 (503) 228-5230
 Fax: (503) 273-8169

Intersection: Baseline Street/South 4th Avenue
Conditions (yr, alt, etc.): 2006 Total Traffic - Weekday AM Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBTH	NBRT	SBLT	SBTH	EBLTH	EBTH	EBRT	
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	79	104	80	46	653	585	80	
G/C for movement:	0.12	0.12	0.12	0.12	0.76	0.76	0.76	
Number of lanes:	1	1	1	1	1	1	1	
CALCULATIONS:								
Length of red interval (sec):	61.6	61.6	61.6	61.6	16.8	16.8	16.8	
Average total queue (veh):	1.4	1.8	1.4	0.8	3.1	2.7	0.4	
Maximum total queue (veh):	3	4	4	2	6	6	2	
Total queue length (feet):	75	100	100	50	150	150	50	
Required storage/lane (feet):	75	100	100	50	150	150	50	
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):			79					
Opposing sat. flow rate:			1828					
CALCULATIONS:								
Opposing flow ratio (Yo):			0.04					
Unblocked G/C:			0.08					
Effective red interval (sec):			64.4					
Average total queue (veh):			1.4					
Maximum total queue (veh):			4					
Total queue length (feet):			100					
Required storage/lane (feet):			100					

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) \times \text{Cycle length}$

Average queue/lane = $\text{Volume} \times \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N \times \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals $\geq N$) = $1 - \text{Sum of probabilities for vehicles } 0, 1, \dots, N-1$

Max N: Highest N such that the sum of probabilities $> (1 - \text{confidence level})$

Queue length = $\text{Maximum queue} \times \text{Storage length per vehicle}$

Required storage per lane = $\text{Queue length} / \text{Number of lanes}$, rounded up to the next highest whole vehicle

Opposing flow ratio Y_o = $\text{opposing volume} / \text{opposing sat. flow rate}$

Unblocked G/C $(g_u/C) = (g/C - Y_o) / (1 - Y_o)$

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7059
Analyst: CBT
Date: 8/29/2005
Filename: H:\proj\file\7059\excel\Queuing\7059_Queue_Baseline_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
 610 SW Alder, Suite 700
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 (503) 228-5230
 Fax: (503) 273-8169

Intersection: Baseline Street/South 4th Avenue
Conditions (yr, alt., etc.): 2006 Total Traffic - Weekday PM Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBTH	NBRT	SELT	SETH	EBLTH	EBTH	EBRT	
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	88	76	232	143	899	707	94	
G/C for movement:	0.22	0.22	0.22	0.22	0.67	0.67	0.67	
Number of lanes:	1	1	1	1	1	1	1	
CALCULATIONS:								
Length of red interval (sec):	54.6	54.6	54.6	54.6	23.1	23.1	23.1	
Average total queue (veh):	1.3	1.2	3.5	2.2	5.8	4.5	0.6	
Maximum total queue (veh):	3	3	7	5	10	8	2	
Total queue length (feet):	75	75	175	125	250	200	50	
Required storage/lane (feet):	75	75	175	125	250	200	50	
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):			88					
Opposing sat. flow rate:			1900					
CALCULATIONS:								
Opposing flow ratio (Yo):			0.05					
Unblocked G/C:			0.18					
Effective red interval (sec):			57.3					
Average total queue (veh):			3.7					
Maximum total queue (veh):			7					
Total queue length (feet):			175					
Required storage/lane (feet):			175					

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) * \text{Cycle length}$

Average queue/lane = $\text{Volume} * \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N * \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals >= N) = 1 - Sum of probabilities for vehicles 0, 1, ..., N-1

Max N: Highest N such that the sum of probabilities > (1 - confidence level)

Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = $(g/C - Yo) / (1 - Yo)$

SIGNALIZED QUEUE ANALYSIS

Project Name: Cornelius Retail Center
Project Number: 7059
Analyst: CBT
Date: 8/29/2005
Filename: H:\projfile\7059\excel\Queuing\7059_Queue_Baseline_4th.xls\WSAM



KITTELSON & ASSOCIATES, INC.
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Intersection: Baseline Street/South 4th Avenue
Conditions (yr, alt., etc.): 2006 Total Traffic - Saturday Mid-day Peak Hour

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBTH	NBRT	SELT	SBTH	EBLT/TH	EBTH	EBRT	
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	97	62	291	93	988	669	76	
G/C for movement:	0.26	0.26	0.26	0.26	0.62	0.62	0.62	
Number of lanes:	1	1	1	1	1	1	1	
CALCULATIONS:								
Length of red interval (sec):	51.8	51.8	51.8	51.8	26.6	26.6	26.6	
Average total queue (veh):	1.4	0.9	4.2	1.3	7.3	4.9	0.6	
Maximum total queue (veh):	4	3	8	3	12	9	2	
Total queue length (feet):	100	75	200	75	300	225	50	
Required storage/lane (feet):	100	75	200	75	300	225	50	
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):			97					
Opposing sat. flow rate:			1845					
CALCULATIONS:								
Opposing flow ratio (Yo):			0.05					
Unblocked G/C:			0.22					
Effective red interval (sec):			54.7					
Average total queue (veh):			4.4					
Maximum total queue (veh):			8					
Total queue length (feet):			200					
Required storage/lane (feet):			200					

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) * \text{Cycle length}$

Average queue/lane = $\text{Volume} * \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N * \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals >= N) = 1 - Sum of probabilities for vehicles 0, 1, ..., N-1

Max N: Highest N such that the sum of probabilities > (1 - confidence level)

Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = $(g/C - Yo) / (1 - Yo)$

Project Name: Cornelius Retail Center
Project #: 7059
Analysis Scenario: 2006 Total Traffic - Weekday AM Peak Hour
Analysis Period: 0.25 (peak 15 minute analysis)
Analyst: CBT
Date: August 29, 2005

V = flow rate for movement
C = capacity of movement
Q = 95th percentile queue (veh)
S = storage need (ft)

# of Int:	3
Veh. Length (ft):	25

* Queue length calculated using Equation (17-37) presented in *Highway Capacity Manual 2000*.

	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB	
North Adair Street / Right-In Right-out Driveway	V 63					34					
	C 1603					578					
	Q 0.1					0.2					
	S 25					25					
North 4th Avenue / N Barlow Street / South Driveway	V 13						1		43	16	
	C 1556						718		1058	674	
	Q 0.0						0.0		0.1	0.1	
	S 25						25		25	25	
North 4th Avenue / North Driveway	V 13						5		1		
	C 1556						858		1017		
	Q 0.0						0.0		0.0		
	S 25						25		25		

Project Name: Cornelius Retail Center
 Project #: 7059
 Analysis Scenario: 2006 Total Traffic - Weekday PM Peak Hour
 Analysis Period: 0.25 (peak 15 minute analysis)
 Analyst: CBT
 Date: August 29, 2005

V = flow rate for movement
 C = capacity of movement
 Q = 95th percentile queue (veh)
 S = storage need (ft)

# of Int:	3
Veh. Length (ft):	25

* Queue length calculated using Equation (17-37) presented in Highway Capacity Manual 2000.

	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB	
North Adair Street / Right-In Right-out Driveway	V 183					224					
	C 1523					343					
	Q 0.4					4.4					
	S 25					125					
North 4th Avenue / N Barlow Street / South Driveway	V 38						14		195	13	
	C 1485						379		981	258	
	Q 0.1						0.1		0.7	0.2	
	S 25						25		25	25	
North 4th Avenue / North Driveway	V 38						34		10		
	C 1485						740		959		
	Q 0.1						0.1		0.0		
	S 25						25		25		

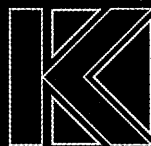
Project Name: Cornelius Retail Center
Project #: 7059
Analysis Scenario: 2006 Total Traffic - Saturday Mid-day Peak Hr
Analysis Period: 0.25 (peak 15 minute analysis)
Analyst: CBT
Date: August 29, 2005

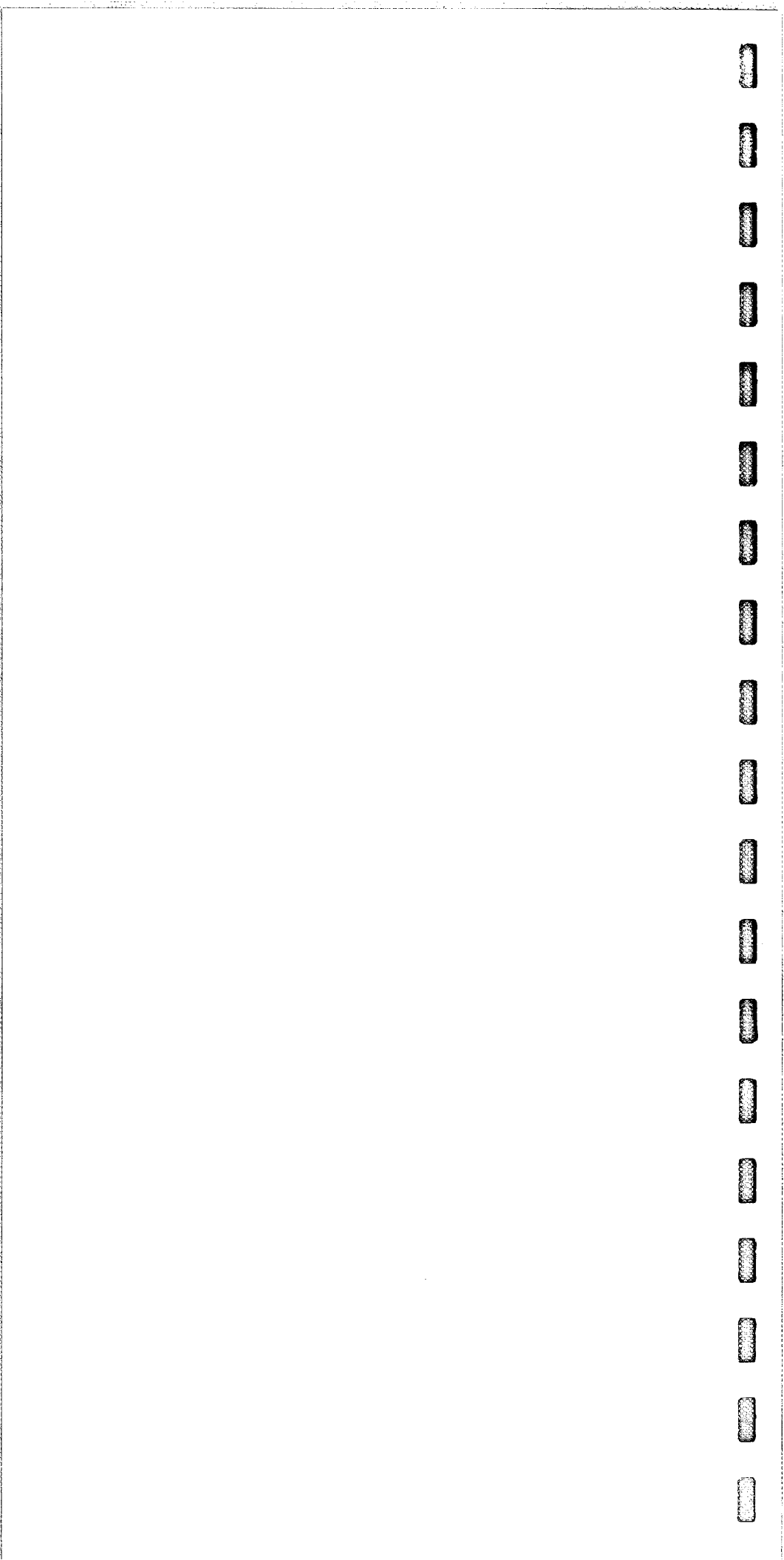
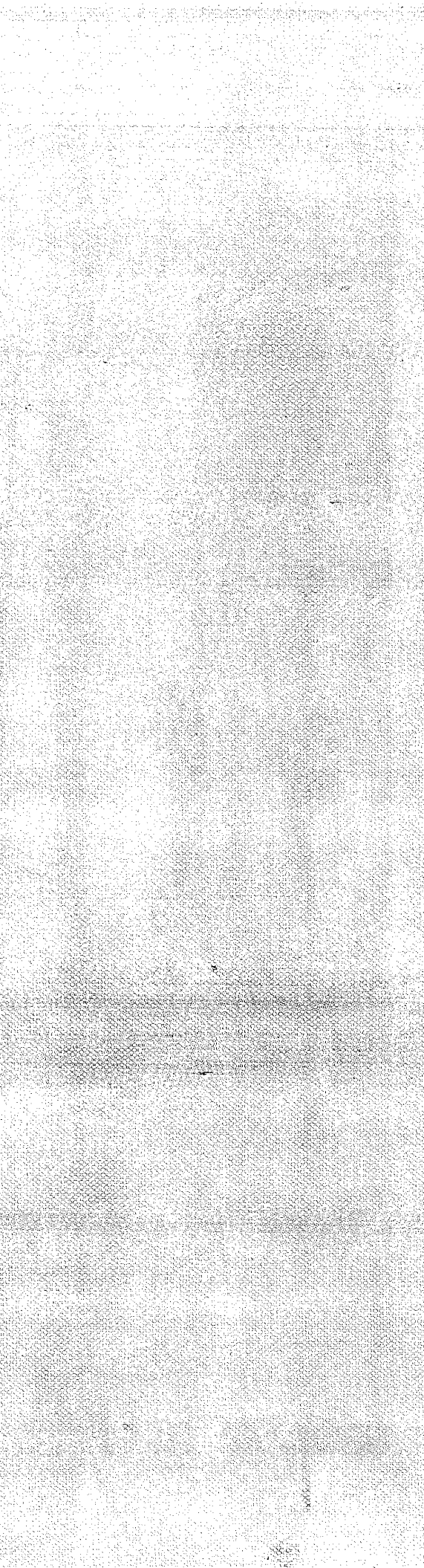
V = flow rate for movement
C = capacity of movement
Q = 95th percentile queue (veh)
S = storage need (ft)

of Int: 3
Veh. Length (ft): 25

* Queue length calculated using Equation (17-37) presented in Highway Capacity Manual 2000.

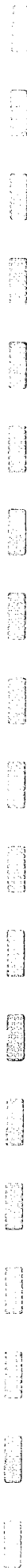
	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	EB LT	EB TH	EB RT	WB	
North Adair Street / Right-In Right-out Driveway						262 468 3.4 100					
V							20		264	20	
C	290						240		1013	143	
Q	1553						0.3		1.0	0.5	
S	0.7						25		50	25	
North 4th Avenue / N Barlow Street / South Driveway	25										
V	67						47		13		
C	1490						671		979		
Q	0.1						0.2		0.0		
S	25						25		25		
North 4th Avenue / North Driveway											
V											
C											
Q											
S											





Appendix J

Alternative Access Scenario Worksheets



Kittelson & Associates, Inc. -- Project # 7059
 Cornelius Wal-Mart -- Cornelius, Oregon
 2006 Total Traffic Conditions -- Weekday PM Peak Hour

Level Of Service Computation Report

2000 HCM Operations Method (Future Volume Alternative)

Intersection #558 N Adair St/N 4th Ave - NO ACCESS

Cycle (sec): 70 Critical Vol./Cap. (X): 0.929
 Loss Time (sec): 8 (Y+R = 4 sec) Average Delay (sec/veh): 23.3
 Optimal Cycle: 97 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1	0	1	0	0	1	0	0	0	0	1	0

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	72	20	0	0	30	43	0	0	0	144	1607	24
Growth Adj:	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Initial Bse:	73	20	0	0	30	43	0	0	0	145	1623	24
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
In-Process&:	0	202	0	0	204	224	0	0	0	0	47	227
Initial Fut:	73	222	0	0	234	267	0	0	0	145	1670	251
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	78	239	0	0	252	288	0	0	0	156	1796	270
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	78	239	0	0	252	288	0	0	0	156	1796	270
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	78	239	0	0	252	288	0	0	0	156	1796	270

Saturation Flow Module:	North Bound			South Bound			East Bound			West Bound		
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.37	1.00	1.00	1.00	1.00	0.85	1.00	1.00	1.00	0.91	0.91	0.91
Lanes:	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.14	1.62	0.24
Final Sat.:	694	1900	0	0	1900	1615	0	0	0	243	2785	419

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol/Sat:	0.11	0.13	0.00	0.00	0.13	0.18	0.00	0.00	0.00	0.64	0.64	0.64
Crit Moves:				****						****		
Green/Cycle:	0.19	0.19	0.00	0.00	0.19	0.19	0.00	0.00	0.00	0.69	0.69	0.69
Volume/Cap:	0.59	0.66	0.00	0.00	0.69	0.93	0.00	0.00	0.00	0.93	0.93	0.93
Delay/Veh:	32.5	30.5	0.0	0.0	32.0	61.0	0.0	0.0	0.0	16.4	16.4	16.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.5	30.5	0.0	0.0	32.0	61.0	0.0	0.0	0.0	16.4	16.4	16.4
HCM2kAvg:	5	6	0	0	7	10	0	0	0	27	27	27

SIGNALIZED QUEUE ANALYSIS

Project Name:
Project Number:
Analyst:
Date:
Filename:

Cornelius Retail Project
7059
CBT
8/29/2005
H:\projfile\7059\excel\7059_4th_Ada..._wpsm_Sig-Queue.xls



KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230
Fax: (503) 273-8169

Intersection:
Conditions (yr, alt., etc.):

North Adair St/North 4th Ave
2006 Total Traffic - WSPM (NO ACCESS)

GENERAL INPUT PARAMETERS:

Cycle Length:	70 sec
Confidence Level (C.L.):	95%
Storage length/vehicle:	25 feet

	APPROACH/MOVEMENT							
	#1	#2	#3	#4	#5	#6	#7	#8
	NBLT	NBTH	SBTH	SBRT			WBLT/TH	WBTH/RT
INPUT PARAMETERS:								
Volume (pre-PHF) (vph):	73	222	234	267			980	1129
G/C for movement:	0.19	0.19	0.19	0.19			0.70	0.70
Number of lanes:	1	1	1	1			1	1
CALCULATIONS:								
Length of red interval (sec):	56.7	56.7	56.7	56.7			21.0	21.0
Average total queue (veh):	1.1	3.5	3.7	4.2			5.7	6.6
Maximum total queue (veh):	3	7	7	8			10	11
Total queue length (feet):	75	175	175	200			250	275
Required storage/lane (feet):	75	175	175	200			250	275
PERMITTED LEFT TURNS:								
Opposing volume (pre-PHF):								
Opposing sat. flow rate:								
CALCULATIONS:								
Opposing flow ratio (Yo):								
Unblocked G/C:								
Effective red interval (sec):								
Average total queue (veh):								
Maximum total queue (veh):								
Total queue length (feet):								
Required storage/lane (feet):								

METHODOLOGY AND FORMULAS USED:

Length of red interval = $(1 - G/C) * \text{Cycle length}$

Average queue/lane = $\text{Volume} * \text{Red Interval} / 3600$

Maximum queue: Random arrival/Constant service

Random arrivals behave according to a Poisson distribution.

There is a probability equal to the confidence level desired (e.g. 95%)

that the queue formed during each red interval will be less than or equal to the maximum queue.

(Prob. of arrivals = N) = $(\text{Red Interval})^N * \exp(-N) / N!$ (the Poisson distribution)

(Prob. of arrivals $\geq N$) = $1 - \text{Sum of probabilities for vehicles } 0, 1, \dots, N-1$

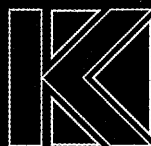
Max N: Highest N such that the sum of probabilities > (1 - confidence level)

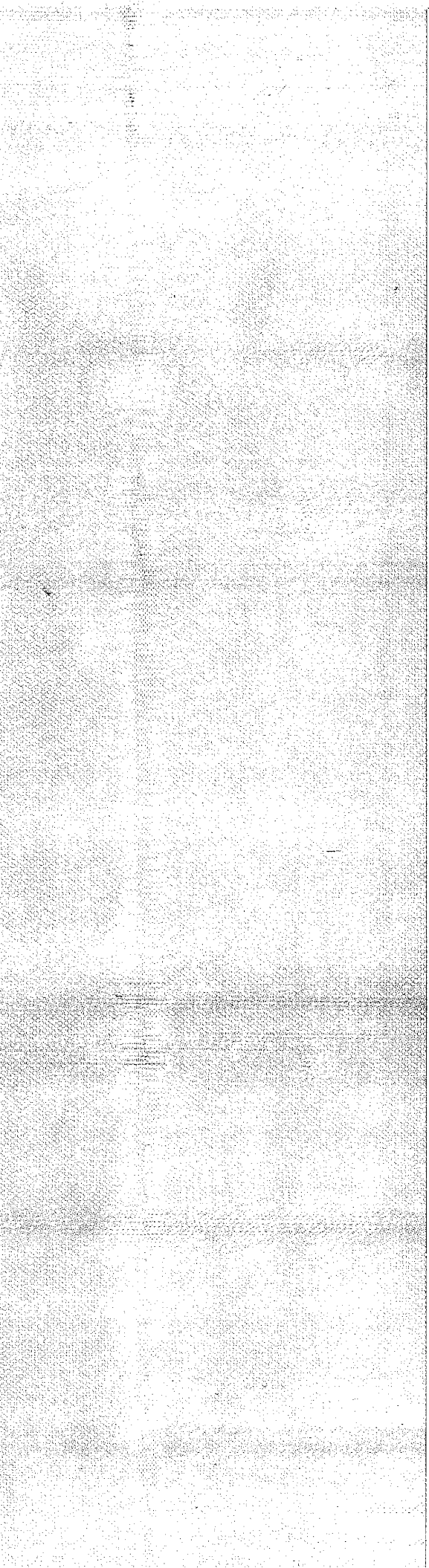
Queue length = Maximum queue * Storage length per vehicle

Required storage per lane = Queue length / Number of lanes, rounded up to the next highest whole vehicle

Opposing flow ratio Yo = opposing volume vo / opposing sat. flow rate sop

Unblocked G/C (gu/C) = $(g/C - Yo)/(1 - Yo)$



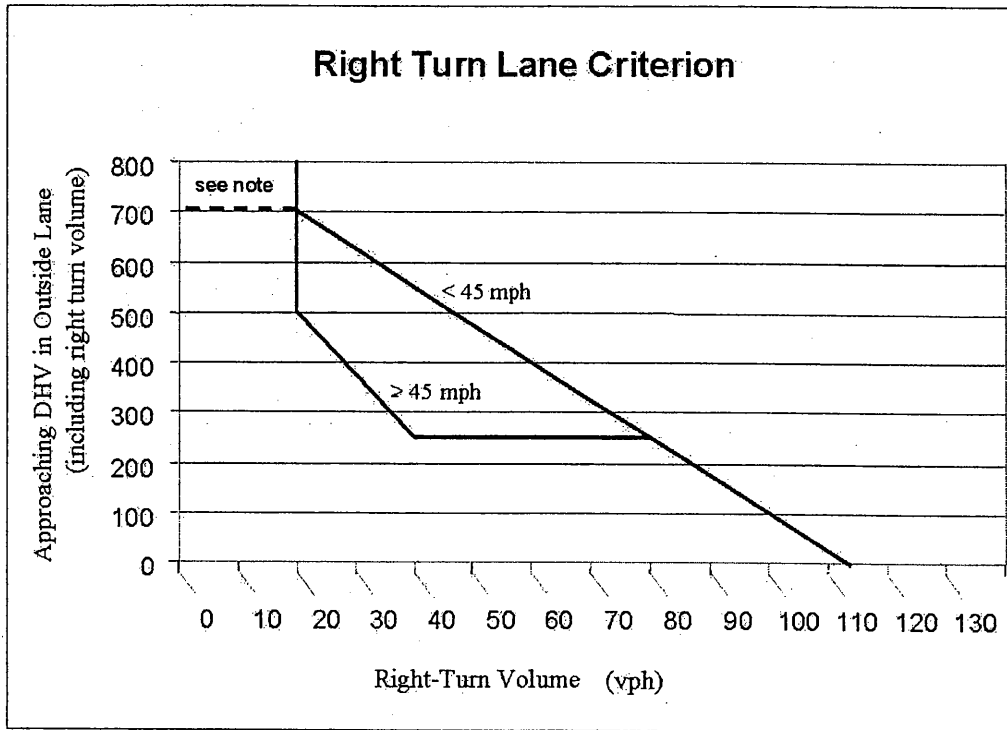


Appendix K

Turn Lane Warrants

Right-Turn Deceleration Lane Warrant

• WB RT on N Adair Street (OR Hwy 8)



PM

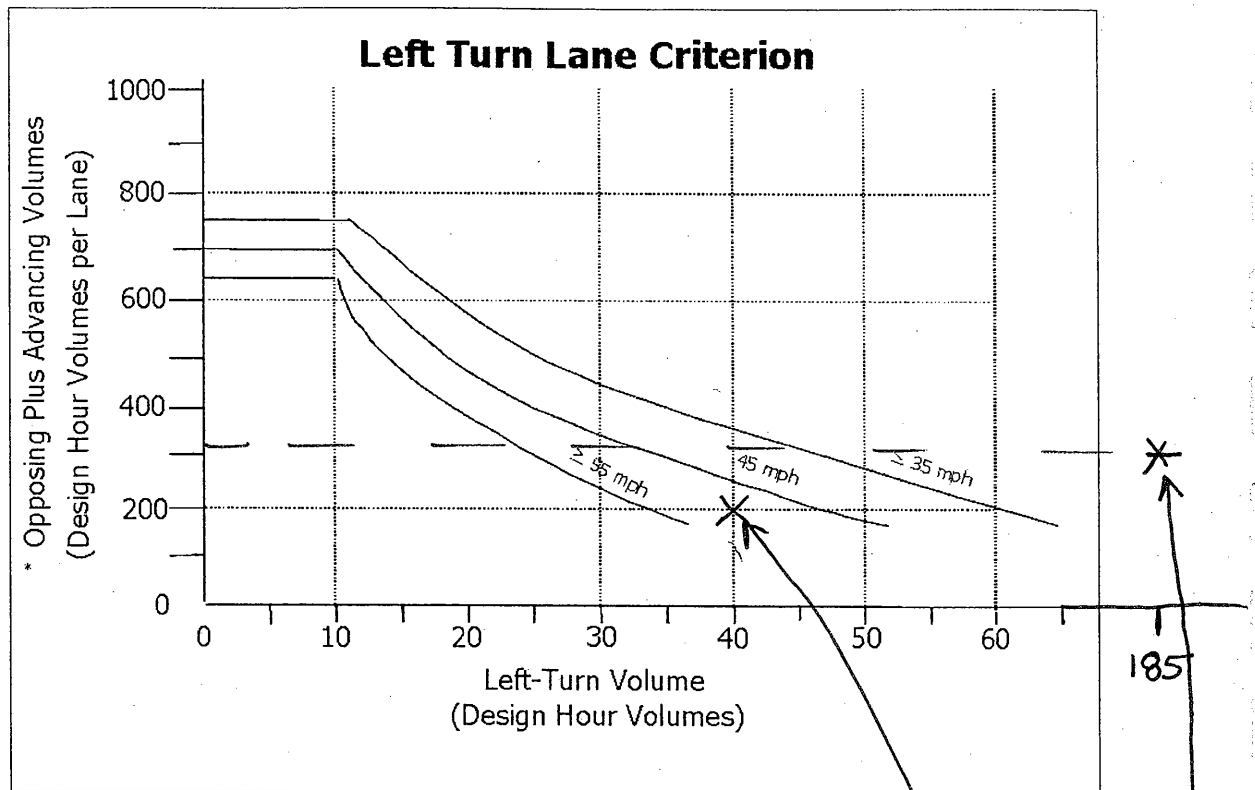
X

Sat

X

210 290

2006 TOTAL TRAFFIC CONDITIONS
(WEEKDAY PM PEAK HOUR)

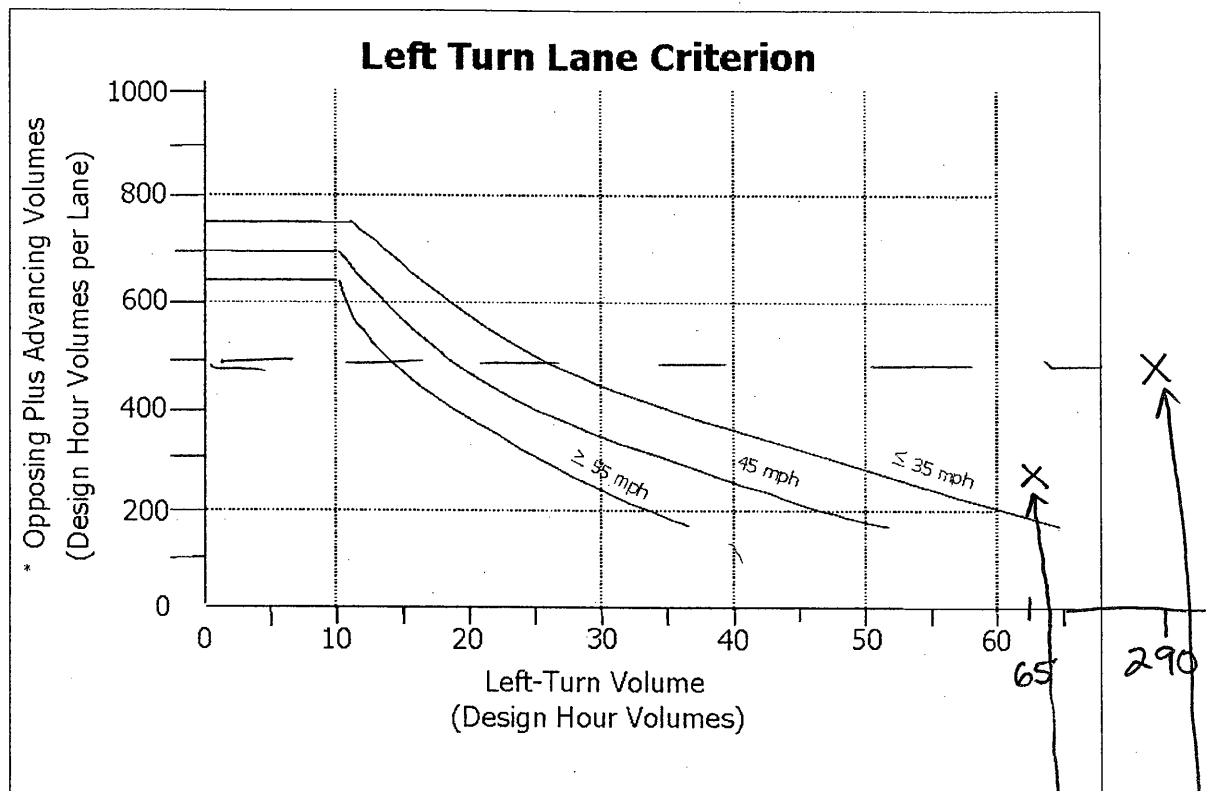


* ((Advancing volume/number of advancing through lanes) + (opposing volume/ number of opposing through lanes))

NORTH DRIVEWAY

SOUTH DRIVEWAY / BARLOW CT.

2006 TOTAL TRAFFIC CONDITIONS (SATURDAY MIDDAY PEAK HOUR)



* ((Advancing volume/number of advancing through lanes) + (opposing volume/ number of opposing through lanes))

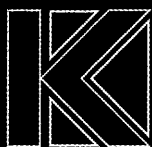
NORTH DRIVEWAY

SOUTH DRIVEWAY / BARLOW CT.



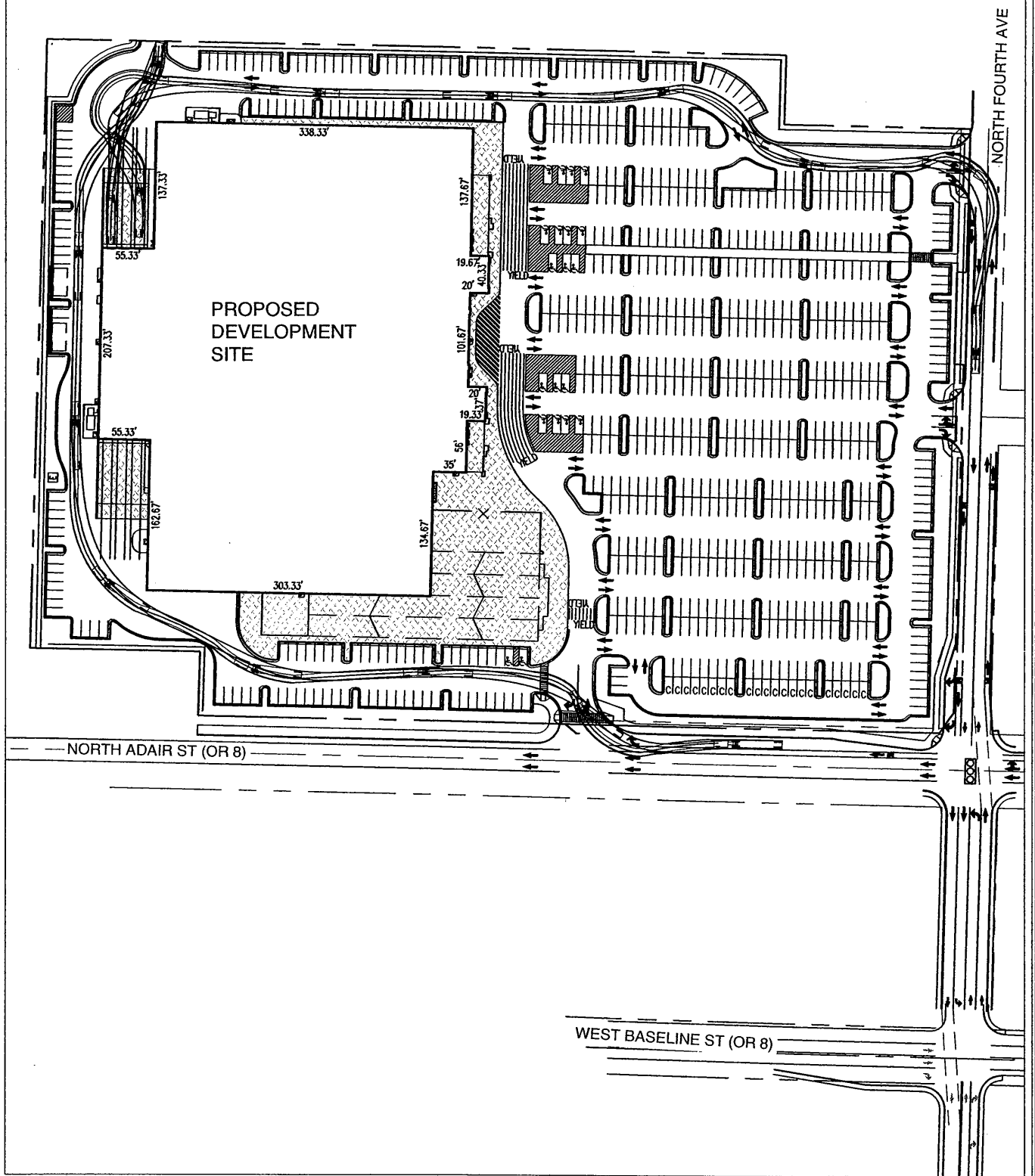
Appendix L

Truck Turning Movement Diagrams





(NO SCALE)



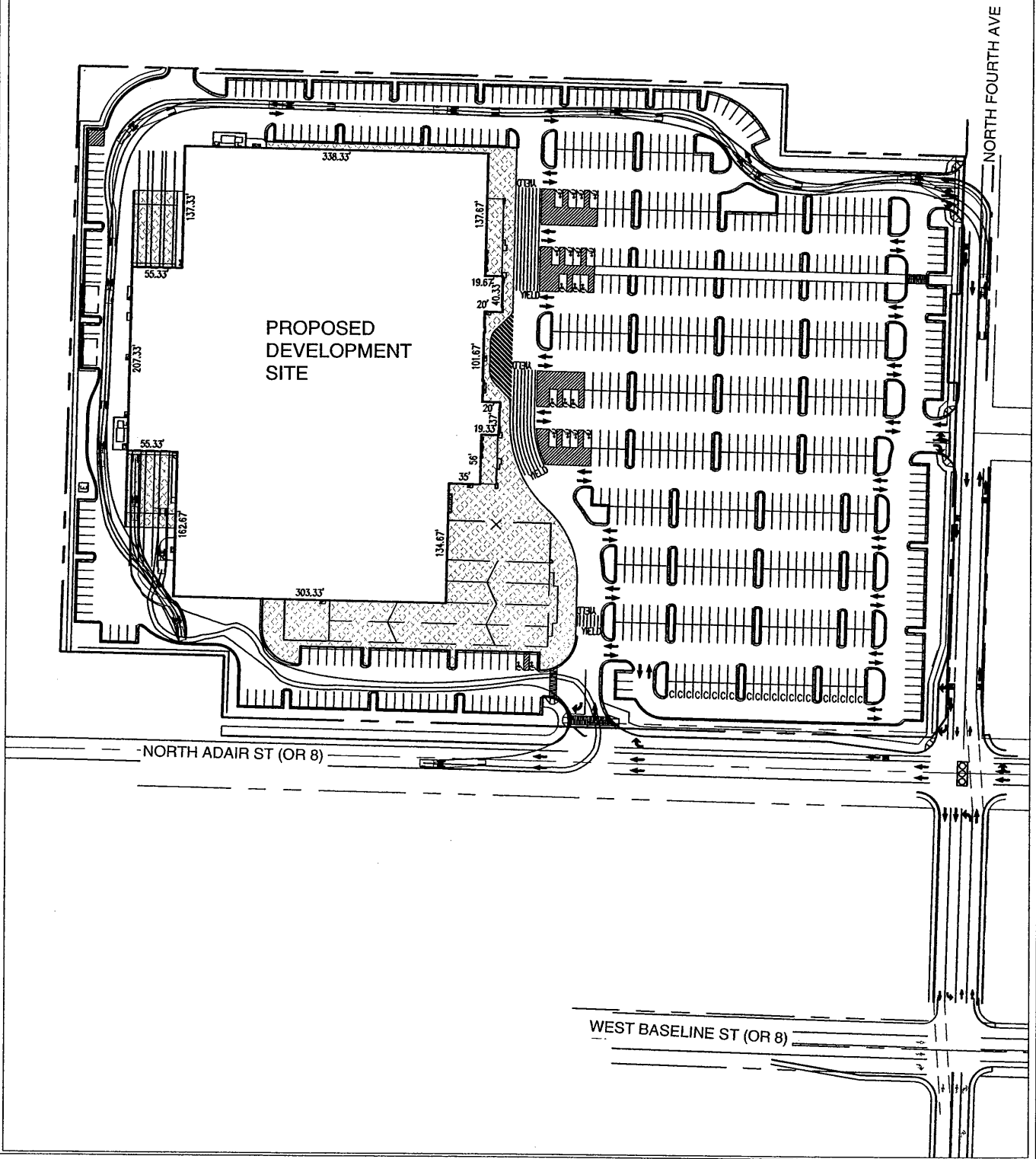
TRUCK TURNING DIAGRAMS - NORTH BAY
CORNELIUS, OREGON

FIGURE
L-1

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(NO SCALE)



TRUCK TURNING DIAGRAMS - SOUTH BAY
CORNELIUS, OREGON

FIGURE
L-2

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TRANSPORTATION PLANNING / TRAFFIC ENGINEERING